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PROCEEDINGS OF THE MARITIMES REGION SPECIES AT RISK RECOVERY TEAMS

MEETINGS OF 2003

1 April 2003 to 31 March 2004

Species at Risk Office
Bedford Institute of Oceanography
1 Challenger Drive, P.O. Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

COMPTE RENDU DES RÉUNIONS DES ÉQUIPES DE RÉTABLISSEMENT DES ESPÈCES EN PÉRIL - RÉGION DES MARITIMES

RÉUNIONS DE 2003

Du 1er avril 2003 au 31 mars 2004

Bureau de coordination pour
les espèces en péril
Institut océanographique de Bedford
1, promenade Challenger, C.P. 1006
Dartmouth (Nouvelle-Écosse)
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May 2005 / mai 2005

Canada

Foreword

The purpose of these proceedings is to archive the activities and discussions of the meeting, including research recommendations, uncertainties, and to provide a place to formally archive official minority opinions. As such, interpretations and opinions presented in this report may be factually incorrect or mis-leading, but are included to record as faithfully as possible what transpired at the meeting. No statements are to be taken as reflecting the consensus of the meeting unless they are clearly identified as such. Moreover, additional information and further review may result in a change of decision where tentative agreement had been reached.

Avant-propos

Le présent compte rendu fait état des activités et des discussions qui ont eu lieu à la réunion, notamment en ce qui concerne les recommandations de recherche et les incertitudes; il sert aussi à consigner en bonne et due forme les opinions minoritaires officielles. Les interprétations et opinions qui y sont présentées peuvent être incorrectes sur le plan des faits ou trompeuses, mais elles sont intégrées au document pour que celui-ci reflète le plus fidèlement possible ce qui s'est dit à la réunion. Aucune déclaration ne doit être considérée comme une expression du consensus des participants, sauf s'il est clairement indiqué qu'elle l'est effectivement. En outre, des renseignements supplémentaires et un plus ample examen peuvent avoir pour effet de modifier une décision qui avait fait l'objet d'un accord préliminaire.

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SUMMARY

In 2003, Canada passed its "Species at Risk Act". The purposes of the Species at Risk Act (SARA) are to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.

As such, the Minister of Fisheries & Oceans, as a "competent minister" under SARA, has responsibility for the survival and recovery of aquatic species at risk. To foster the survival and recovery of species at risk, SARA requires the development of "*Recovery Strategies*" and "*Action Plans*". Recovery Teams are in place for the North Atlantic Right Whale, Inner Bay of Fundy Atlantic Salmon, Atlantic Whitefish, Lake Utopia Dwarf Smelt and the Atlantic Leatherback Turtle.

This document provides a formatted and stylized synopsis of the meetings of these recovery teams for the period 1April 2003 to 31 March 2004.

SOMMAIRE

En 2003, le Canada a adopté sa *Loi sur les espèces en péril* (LEP). Cette loi vise à prévenir la disparition - de la planète ou du Canada seulement - des espèces sauvages, à permettre le rétablissement de celles qui, par suite de l'activité humaine, sont devenues des espèces disparues du pays, en voie de disparition ou menacées et de favoriser la gestion des espèces préoccupantes pour éviter qu'elles ne deviennent des espèces en voie de disparition ou menacées.

En sa qualité de « ministre compétent » aux termes de la LEP, le ministre des Pêches et des Océans est responsable de la survie et du rétablissement des espèces aquatiques en péril. Pour faciliter la survie et le rétablissement des espèces en péril, la LEP exige l'élaboration de « programmes de rétablissement » et de « plans d'action ». Des équipes de rétablissement ont été mises sur pied pour ce qui concerne la baleine noire de l'Atlantique, le saumon atlantique de l'arrière-baie de Fundy, le corégone atlantique, l'éperlan nain du lac Utopia et la tortue luth.

Le présent document fournit un compte rendu sommaire formaté et stylisé des réunions tenues par ces équipes de rétablissement entre le 1er avril 2003 et le 31 mars 2004.

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NORTH ATLANTIC RIGHT WHALE RECOVERY IMPLEMENTATION TEAM

INTRODUCTION

A Canadian Recovery Implementation Team for the North Atlantic Right Whale has been functioning for several years. The team completed the first phase of their work with the release of a Canadian Recovery Plan in 2000. Since then, the Canadian North Atlantic Right Whale Recovery Implementation Team meets once to twice per year to discuss progress on the Implementation Table in the current Strategy. The next step for the Team is to amend the recovery plan so that it is compliant with the new federal legislation, the Species at Risk Act (SARA). Following the completion of that step, the Team will draft a Recovery Action Plan according to SARA guidelines.

Members of the North Atlantic Right Whale Recovery Implementation Team met on October 20, 2003 in Dartmouth, Nova Scotia. The primary goal of this meeting was to review and rank recovery priorities for right whales so they would be ready for the review of proposals for the Habitat Stewardship Program and the World Wildlife Fund (WWF) Endangered Species Recovery Fund. Another goal of this meeting was a discussion of different aspects of the Habitat Stewardship Program including an outline of the program, the review process and potential projects. Recovery strategy updates as well as updates on Species at Risk Program funded science projects were presented. Following is a formatted and stylized synopsis of this meeting.

Synopsis of the October 20, 2003 meeting

Members of the North Atlantic Right Whale Recovery Implementation Team met on October 20, 2003 at the Bedford Institute of Oceanography in Dartmouth, NS. Please see Appendix 1 for a list of participants. The meeting opened with introductions and a review of the agenda. Please see Appendix 2 for a copy of the agenda. Several items were added to the agenda. These included: 1) Team membership, 2) Gray zone, 3) Review previous meeting minutes, and 4) Gear entanglements.

Agenda Items

Updates

Shipping lanes in the Bay of Fundy
It was noted that the Bay of Fundy shipping lanes have been relocated further east and it appears that the ships were further away from the aggregation of right whales than in previous years. A rough map of right whale locations indicated that they were present in the old outbound lane thus moving the lanes is thought to be having a positive effect.

A discussion was held on the dead right whale was found upside down and extremely decomposed on October 2, 2003. It was identified as 2150, a female first sighted in 1991. It appears that there was only one strike but it was a catastrophic one. A lot of samples have been taken due to the humpback die-off and the possibility of bio toxin impact. The whale had drifted 23 miles in 49 hours between first sighting and recovery of the carcass. These data are being shared with oceanographers that are experts in drift (Charles Hannah in Canada and Dave Mountain in the US); they are trying to determine where the strike would have occurred. It will be a couple of months before any data from the analysis of samples come back.

Conservation measures for Roseway Basin
Field studies this past summer indicate that right whales are indeed in the Roseway Basin Conservation Area again and that ships are definitely coming through the conservation area.

A comment regarding the speed of ships in the Bay of Fundy (BoF) and the Roseway Basin was brought up. The speed issue has not been addressed; however, it should be, as a speed above 10 knots is thought to increase the likelihood of whale mortality in the event of a collision between a ship and a whale by 50%. It was suggested that speed was also easy to supervise through Fundy Traffic. The Vessel Whale Working Group should address this. The Vessel Whale Working Group will discuss the issue of speed at their next meeting anticipated in winter/spring 2004

Births and Mortalities
M. Brown distributed a draft table from Amy Knowlton of the New England Aquarium on known mortality events. The mortality discussed earlier is not listed. Some of

these data have been published. There were a total of 19 calves documented in 2003 as of the date of this meeting.

MOU with the Center for Coastal Studies

An MOU (Memorandum of Agreement) was signed with the Center for Coastal Studies. They are mandated to help with the release of entangled whales in Canadian waters. This agreement has provided for a disentanglement person hired by CCS (Chris Slay) to be present and able to respond in the Bay of Fundy 24 hrs a day, 7 days a week. He also conducted whale patrols in the Bay of Fundy conservation area on days with suitable weather, checking every right whale encountered for evidence of an entanglement and chatting with boaters.

Entanglements

It was suggested that we need to address entanglements in terms of where Canada needs to go with this issue. It should definitely be discussed at the January meeting. There were eight entangled right whales last year (2002). One is dead – washed up in Nantucket. The other seven have not been seen as of this date [Note: an update on the status of the sightings of the entangled right whales from 2002 was circulated to the team by email following the meeting.]

Gray Zone

A presentation was made by K. Sonnenberg on the Gray Zone which is an area between US and Canada, adjacent to Grand Manan. In a 1987 decision by The Hague, there was an area that was not decided upon and any US/Canadian fisherman can fish there. There has been a lucrative lobster fishery there; however, in the past 10 years, American fishers have started to creep in over the line. There is no limit on catch; however, Canadian fishermen cannot scallop fish when American fishermen still have their lobster traps set out. We need to address this as an area of interest. There is more interest from the Americans as of late so we hope to get them on board with declaring it an area of interest for them. Once this is achieved, a management plan can be developed that will benefit both sides. This is where right whale issues can also be addressed by making certain that lobster gear is moved when whales are present. Right whales equipped with satellite monitored transmitters in 1999 showed several tracks through the Grand Manan Channel.

Review of minutes and action items

Outstanding Action Items

During the review of minutes and action items from last meeting it was commented that the process by which the Implementation Team is kept up to date needs to be formalized. For example, when the last minutes were sent out, *attachments were alluded to but they weren't attached.* This information needs to come out more quickly. Agreed and the missing attachments will be sent to the team.

Letter to Neil Bellefontaine regarding the proposed quarry at White Point NS. This was not completed for a number of reasons; Habitat Branch is dealing with this issue and it was explained that it was agreed to put together a review panel for the proposal. An agreement was drafted and the public was called upon to comment. There was a project description and Merriman wrote a response on behalf of WWF that was copied to team chairs stating that the marine portion was not well represented and concerns about right Whales explicitly suggested. It was commented that the team should be kept involved and take part in reviews when appropriate. There is an environmental assessment available; however, there are a number of problems with the assessment and it will be updated now that there is a Fed/Prov panel. It was pointed out that in general, any issue in the Bay of Fundy will need addressing in terms of Species at Risk and this Team should be ready to respond about how it may impact the right Whale.

Report from the Disentanglement Working Group. This group never met for several reasons including a representative from the Center for Coastal Studies disentanglement team not being available to consult. Insurance issues related to the Habitat Stewardship Program (HSP) were addressed and found that very few places will provide insurance for this type of work and HSP will not fund programs that do not have appropriate insurance. Work has commenced with the Coast Guard to develop protocols. It was commented that the group should meet on this issue and that it is imperative that a process be put into place very soon.

Issue of membership. We want to ensure that we have the appropriate representation. Now that we are working toward updating the existing strategy and moving ahead with an Action Plan, we might want to invite people in with certain expertise. The group felt that the numbers should be kept at a minimum (approx. 20); however, experts can be called upon when necessary. Certain groups need to be involved and if the current members are not showing up at meetings, other people from these groups should be solicited. It was recommended that both the province of NB and the Gulf region be involved. It is important to keep in mind that we will need representatives from all regions to sign off on the final SARA compliant strategy as well as the provinces, Parks, Transport Canada and EC. Therefore, we might want them at the table.

It was commented that the name 'Implementation Team' should be reconsidered as 'Recovery Team'. It is felt that it can be confusing. Right now, it's not an issue, as the NARW is not listed so there is time to deal with this.

Recovery Strategy Update

Process and Timelines

K. Querbach provided a document that outlined the missing SARA compliant components (see Attachment 1). It was noted that DFO has the responsibility for ensuring the development of a SARA compliant recovery strategy. The North Atlantic Right Whale was on Schedule 2 of the SARA, and was reconfirmed in May 2003. The

process is now unfolding and listing under the SARA will come about in approx. 6-8 months. We will have one year from that time to develop the strategy but keep in mind that this includes the process of ministerial approval (signoff). We really don't have that much time. We should aim for 6 months after the listing to have the strategy into the region.

A document was distributed that outlined the proposed process by which the recovery strategy will be updated and reviewed. (see Attachment 2). The members present felt that it was a good approach, as it was the most efficient and everyone would still have ample opportunity to comment. We are shooting for January 2004 to have a first draft of the SARA compliant strategy. At this point, the larger group would review it.

Critical Habitat

The approach for dealing with the requirement for critical habitat is to bring a number of experts together from Canada and the US in order to come up with some advice to the recovery team on critical habitat (CH) identification. This date is set (November 19 and 20, 2003) and a diverse group of people have been invited. Subsequently, this section will be tabled within the strategy for review. It is possible that the group will decide that they cannot identify CH at this time and in this case, a list of studies in order to be able to identify it is required in the recovery strategy.

Population Targets

K. Smedbol is currently working on the population targets. There may be a need for a smaller meeting to address this.

Incidental Harm Permits (IHPs).

It was noted that Fisheries management has to ask Science for an expert opinion. They then take this information and issue IHPs based on the recommendations. The issue of 'allowable take' or 'allowable activities' must be addressed in the SARA compliant strategy and the recovery team can do this independently from Fisheries management's process. It is important to keep in mind that IHPs are only required in the absence of a strategy. Once the strategy is in place, 'allowable activities', etc will be based on what is contained in the strategy. The RT have to come up with a list allowable activities/take. However, NARW is not on schedule 1 of the Act. Therefore, consultations will be required prior to the addition of this species to the legal list under SARA. This action will necessitate a Regulatory Impact Analysis Statement (RIAS) as part of the regulatory process.

Recovery Priorities.

The SAR Coordination Office is asking all teams to look at recovery priorities this year to be used for funding purposes (SARCEP, HSP and WWF ESRF). As more species are listed, the pool of funding will get smaller and smaller so this list will allow us to focus projects. The three categories are: 1) Essential for Recovery, 2) May Promote Recovery and 3) Desirable for Recovery. The group felt that it was best to

use the project priorities from the current strategy and update them accordingly. The team reviewed each of the recovery priorities in the original recovery plan. (Please see Attachment 3 for the list created at this meeting)

HSP Outline and Review Process.

K. Querbach discussed the HSP program and asked that a review team be struck for review of project pre-proposals. All projects must be signed off by the recovery team to ensure that the project meets the recovery priorities for the NARW. The group decided that no proponent should be involved in the review of HSP pre-proposals. A group was struck to review the pre-proposals and to provide a ranking. The review team for HSP is as follows: J. Huston, K. Querbach, W. Williams, J. Logan and C. Merriman.

A review team was also struck for the Endangered Species Recovery Fund (ESRF): R. Stephenson or designate, W. Williams, C. Merriman, S. Kempton and K. Querbach.

Updates from St. Andrews Biological Station (SABs).

SABs work on right whales as well as other species at risk. Currently there are four main projects involving research on Right Whales.

1. *Development of Canadian Right whale sighting database.* Thus far, the database has been developed for storage of sightings. Data recovery is also underway from the department's records (fishery patrol, observers) including data quality recording.
2. *Distribution/Abundance of RW in Canadian Waters.* With this program, we are trying to work where others are not. We have increased effort to some degree but we are falling short of what we would like to do. It will build over time. We are comparing underwater acoustics with ship-based surveillance. Right whales were recorded on acoustic gear but we didn't see them from the ships.
3. *Fishing Gear Overlap (with Dalhousie).* This project aims to quantify fishing gear overlap with right whale distribution. The fishing distribution in recent years has been summarized and it is being compared to investigate any overlap.
4. *Whale Watching/Research – Potential Disturbance.* This project aims to investigate the potential disturbance from whale watching and research activities. This was conducted from a camera suspended on a blimp. The results are good and the perspective from above is good.

A comment was made on setting approach limits. This is definitely coming and will help to make informed decisions.

R. Stephenson announced that the date for the Bay of Fundy research coordination meeting has been set for March 30 and 31, 2004.

Other Business

Gear Modification Issues

It was suggested that the recovery team lead a more coordinated approach to reducing the risk of entanglements. This is a very important issue especially considering the SARA and IHPs. Industry has a lot of scope for change if they know what direction to go in and if there is some incentive. The group suggested that the Fishing Working Group should take this on. The Working Group has been dormant for the last year but this does not mean that they can't get involved again. It is just a matter of letting them know that a strategic approach is required and asking if they would like to take it on. It should be explained that things have changed, much like an information session.

Communications Strategy

It was suggested that a strategic approach be made with regard to NARW communication. We need a good communications strategy for the upcoming Action Plan. A communications group should be struck with representation from all working groups. Targeted groups would include the fishing industry, whale watchers, .etc. General information to the public is also important; there would be an emphasis on what is going on in terms of research and recovery. This will be important if and when IHPs are issued. People will want a justification. W. Williams will represent communications but she will work with a group from this team who can advise her.

INNER BAY OF FUNDY ATLANTIC SALMON RECOVERY TEAM

INTRODUCTION

The meetings of the Inner Bay of Fundy Atlantic Salmon Recovery Team provide a framework for developing strategies for the conservation and restoration of Inner Bay of Fundy Atlantic salmon populations and for identifying factors that may influence their survival. Following sharp declines in numbers of returning adults in most Inner Bay of Fundy rivers, these Atlantic salmon were designated endangered in 2001 by COSEWIC. While efforts continue to identify the reasons for this decline, a brood stock management program has been developed to help re-establish populations while maintaining genetic diversity.

Members of the Inner Bay of Fundy Salmon Recovery Team met on April 30, September 30, and November 21, 2003 in Amherst, Nova Scotia. The goal of these meetings was to review progress made in the evaluation of Inner Bay of Fundy (iBoF) salmon populations and habitats and to discuss current and future projects for the conservation and restoration of these populations. Following is a formatted and stylized synopsis of these meetings.

Synopsis of April 30, 2003 Meeting

Members of the Inner Bay of Fundy Salmon Recovery Team met on April 30, 2003 at the Wandlyn Inn in Amherst, Nova Scotia. Please see Appendix 3 for a list of participants. The meeting opened with introductions and a review of the agenda. Two items were added. Please see Appendix 4 for a copy of the agenda.

Agenda Items

Review of Action Items from November 22, 2002 Minutes:

Posting of decisions reached via e-mail on the Recovery Team's (RT's) File Transfer Protocol (FTP) site was discussed. It was suggested that these 'decision' e-mails should be summarized rather than maintained in an active folder of e-mails. The quickest way to keep an e-mail decision record is to send them all to DFO Central Records (this includes both current and historical records). It was also suggested that decisions made by e-mail go to the RT for inclusion in the minutes.

Recommendation on what to do with small numbers of parr in Live Gene Bank (LGB) from the Genetics Technical Committee was discussed. The last recommendation was that they be released back into the wild after kinship testing. Releasing separate small stocks or progeny of random matings to a single river should be considered. This issue is to be re-assessed with further information at the fall meeting of the Planning Group.

Genetics Technical Committee is trying to address the question of differentiation of wild and LGB fish and its importance. This item is on-going and will be reviewed at the next meeting.

NB Electroseining data discussions are on-going between F. Whoriskey and A. Curry.

The Species at Risk Office is to develop a proposal for a PY (person year) to coordinate education/outreach for iBoF salmon. The Planning Group was to rule on recommendations but this was deferred to a later date as no student is available at this time.

Biodiversity Operators to notify Conservation & Protection (C&P) of stocking plans. This was agreed to at November 22 meeting.

Planning Group to decide on criteria for release of fish. Priorities for the retention of fish in the LGB is as follows:

1) wild fish
2) wild selected F1's (families not in the LGB)
3) captive F1's

There are 1000 typed F1 pre-grilse at Mactaquac for which the recommendation is to retain 132 (rare families that may be difficult to locate in the wild), release about 600 into the Little River system of the Petitcodiac (in-river gene banking river) this spring. The remaining 300 or so are to be released into Little or Coverdale River as mature grilse this fall. Four of the spring fish will be acoustically tagged with frequencies to be monitored by receivers on loan to AMEC for downstream smolt investigations at locations upstream and downstream of the Petitcodiac Causeway. These releases are not a recovery action but rather a holding action for families that are already in the Big Salmon River.

Planning Group to advise on Genetics Technical Committee Proposal resulting from the April 19, 2002 Planning Group meeting. This item was reviewed on April 29, 2003 and an action plan will be reported at the next meeting. The Planning Group is to advise on an experimental strategy to assess relative family survival by age of release.

Species at Risk Act

An overview of the SAR Act was given by K. Davidson, CWS Environment Canada. He made the following points:

- Incidental Harm Permits (IHPs) will have an exemption of 1 year after the proclamation of SARA in order to allow for assessments.
- Public Information sessions on SAR are to be held in conjunction with the June 'pronouncement' of the Act. The original invitee list sent to the government was missing many important client groups and Environment Canada has since sent a list of approximately 350 people. The general public will be invited via newspaper ads. Information packages entitled "What does it mean to me?" (i.e. fisher, farmer, etc.) are being developed.
- In reply to a question which asked whether funding was available for the recovery of a species, K. Davidson said that a certain amount of money is allocated to SARA but the more species are listed, the thinner the money must be spread.

Critical Habitat (CH)

P. Amiro gave a PowerPoint presentation that he had provided at a DFO CH Workshop in Montreal last December. He noted that identification of critical habitat for survival or recovery of the stock complex will be required as part of the next iBoF recovery strategy. The presentation pointed out the complications introduced by uncertainties in life-history strategies, meta-population structure and recovery targets and described an approach for estimating the productive capacity of freshwater habitat using remote-sensed data and historical distributions. Within the marine environment, sea surface temperature was used as a measure of habitat preference within the Bay of Fundy and Gulf of Maine on a month by month basis. Designation of critical habitat for both freshwater and marine environments may be required. The strategies to attain survival through supportive breeding and rearing to maturity

requires only critical freshwater habitat but a strategy based on recovery requires designation of critical marine habitat as well. Peter suggested that for 'survival', one might use the minimum requirements for in river live gene banking and that for 'recovery' one should consider the 'transitional' zones.

There was a question regarding Gilles Lacroix's pelagic trawl survey for post smolts in 2003 and testing of a temperature preference hypothesis using a real time marine SST model. In Lacroix's absence, it was felt that such a proposal was too much of a departure from prescribed work plans. An effort to incorporate hypothesis testing would be made in ensuing years.

Fishery Regulations and Illegal Introductions

G. Stevens presented an amendment of Fishery Regulations to prohibit transport alive or possession alive of certain fish species. The minnow trade is being considered but likely won't be included in the legislation. Live bait is prohibited in most of NB except for boundary waters between Maine and NB where live bait is permitted if taken from those waters.

There was a general consensus that the Recovery Team supported the proposal. It was suggested that the list of species to which the prohibition of live transport or possession alive apply should be exhaustive but provide legitimate exceptions (i.e. pet stores, live shellfish, etc.). The timeline for the new legislation is 2004/2005.

Another option for discouraging invasive species is the development of a reward system. However, a proposal by the Atlantic Salmon Federation and NB Nature to offer a reward of $10,000 for information leading to a conviction was turned down.

Consultations on changes to the regulations have not been carried out with the bass associations. The NS Federation of Anglers and Hunters have been consulted and did develop a resolution of support.

Recommendations to Combine Planning Group Technical Committees

The recommendation to combine Monitoring and Research and Fish Culture and Genetics was accepted by the RT.

Update of Proposed Activities for 2003

Please see attachment 4 for a list.

The issue of whether the aboideau on the Chiganois River operates effectively for the passage of smolts arose. J. Gibson is to provide, to Habitat Management Division DFO, a list of aboideaus for potential fish passage evaluation. (This is to include the Chiganois, Great Village, Parrsboro, Shepody, Parrsboro and Petitcodiac Rivers).

DFO June RAP

In May of 2001, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) undertook an evaluation of the status of this salmon population (to 1999) and designated it "endangered". COSEWIC is to re-evaluate this designation as early as April 2004. In preparation for this, DFO has undertaken to assess all new relevant information. In addition, DFO is committed to informing clients and stakeholders on trends of iBoF salmon population abundance. The assessment of data will serve to peer review information for use by COSEWIC and to generate a stock assessment for public dissemination.
The date for the RAP meeting is June 11-12, 2003 in the Veteran's Affairs Boardroom, Belmont House, Dartmouth. Participants in the Planning Group are welcome reviewers. Topics will include:

1. Hatchery stocking history of iBoF rivers (Gibson, Bryan and Amiro)
2. Gene flow within the iBoF salmon (O'Reilly)
3. Live Gene Banking iBoF salmon populations, 1998-present (O'Neil and Goff)
4. Multiple index procedures to infer status and recovery of Big Salmon and Stewiake Rivers (Gibson and Amiro)
5. Stock status of additional 40 iBoF rivers (likely qualitative based on genetics, fishery performance and historic data) (Gibson and Amiro)

Other Items

Proceedings Series
L. Cullen spoke to the RT regarding the intention of Maritimes Region Species at Risk office to include the Minutes of RT meetings in one yearly 'Proceedings Series'.

Parrsboro Conservation and Protection (C&P) Activities and Public Education Project
V. Smith reported that C&P hoped to continue last years' work although funding is as yet unclear. Work would include patrols on 9 rivers suggested for gene banking in the Minas Basin and inventory of salmon pools, river access, spawning areas and proximate land based activities (forestry/ logging). A weatherproof sign has been developed (revamp of ASF poster) for posting. More work is planned on the coast on the identification of impacts of brush weir and recreational gill nets (target herring) on salmon, particularly on night tides. Striped bass recreational fishing also warrants more intensive scrutiny.

Communications
One hundred fifty posters are being printed as are 1000 English and 500 French brochures (same information as the poster) for hand-outs. A PowerPoint presentation has been developed for presentation to schools.

Next meeting
Having the next meeting sooner than November would be better in terms of developing ideas for HSP. There is also a need to consider that the RT shouldn't approve an HSP proposal just because it includes an activity listed in the Recovery

Strategy. It was decided that Planning Group and RT meet on September 29 and 30 respectively, to discuss funding/proposals (preliminary planning), followed by a regular November meeting (date to be decided) at which summary field season activities and possibly final HSP proposals would be reviewed.

Synopsis of September 30, 2003 Meeting

Members of the Inner Bay of Fundy Salmon Recovery Team (RT) met on September 30, 2003 at the Wandlyn Inn in Amherst, Nova Scotia. Please see Appendix 5 for a list of participants. The meeting opened with introductions and a review of the agenda. Two items were added. Please see Appendix 6 for a copy of the agenda.

Agenda Items

Review of Agenda

A number of agenda items were deferred due to the cancellation of the Planning Group Meeting originally scheduled for September 29, 2003 and the absence of many RT members.

Review of RT Minutes and Action Items from April 29 and Planning Group Minutes and Action Items from April 30

Website and File Transfer Protocol (FTP) site.
The website is at the point where it could be published. However there is no funding to pay the $3500 translation costs. P. Amiro is to assess decision making emails from1998-2000 and recommend those appropriate for FTP posting. L. Marshall is to locate meeting minutes to be added to the FTP site.

Release and mating of small stocks in Live Gene Bank (LGB).
It was previously recommended that that small stocks be released back to the wild after kinship testing. Another recommendation was that the progeny of small stocks be released to a single river. However, levels of inbreeding and their effect on survival are a concern. P. O'Reilly reported that except for the Debert and Irish Rivers, levels of inbreeding will accrue slowly. Evidence in the literature suggests that there are very limited inbreeding effects below an inbreeding coefficient of 0.25. He advocates a strategy that will allow within-population crosses until inbreeding effects are observed or an inbreeding coefficient of 0.25 is reached. At this point he suggests gradually introducing new individuals (simulating natural gene flow) while continuing to monitor inbreeding over time. He has discussed this approach with Roger Doyle who thinks that there should be less concern with genetic diversity within rivers because drift is more important than selection when small numbers of individuals are involved. O'Reilly still prescribes a more conservative approach and he will formulate a recommendation for mitigating inbreeding in rivers with small numbers of individuals (i.e. a mating strategy). He will calculate inbreeding coefficients and link these to number of families and to inbreeding depression. He will make recommendations for the surpluses including cost/benefit analyses. Due to time constraints the report will be prepared by October 10, 2003.

F1 pregrilse to be released as mature grilse this fall.
R. Wissink suggested that if 300 were released to Point Wolfe, a reasonable monitoring program could be undertaken. The grilse would be monitored for success

and 24 would be tagged with acoustic pingers. The study would attempt to determine if the F1 release is a successful recovery strategy. Most of the fish are in the 3 to 6 pound range and appear to be mature. L. Marshall noted that Point Wolfe is low priority and so it could be used as an opportunity to test for returns. P. O'Reilly stated that he cannot tell gentically whether the remaining fish in Pointe Wolfe are original or remnants of stocking (74% of samples were from 5 families +EU haplotype). On the Little River (originally proposed for release of F1s), there would be no way to separate which group was successful as there would be releases at different stages. T. Goff suggested that some of the immature fish be tagged and then they could be released to different sites. However, sample sizes would be reduced if immature fish were tagged and released to multiple sites. O'Reilly reminded the team that there are some Minto origin families in this group and therefore some of the fish might really be F2s (really F1.5s since they are a cross between wild and F2). These fish should not be used in this experiment.

Amiro questioned the utility of acoustic tags in determining anything about spawning or the transportability of the results. He suggested keeping the sampling design as simple as possible and asked how many fry (age 0-parr) have to be sampled next year to ensure success. O'Reilly clarified that adults have already been partially processed. However, he noted that spawning does not reflect survival of progeny and suggested that sampling might be required at multiple life stages (i.e. smolts). Wissink and Amiro discussed the value of tagging fish.

The potential to monitor populations through genetics alone was discussed. Wissink and O'Reilly are to develop an experimental design for discussion. O'Reilly has developed specific plans for LGB within the current bounds of operating capacity. These are to be discussed at the November Planning Group Meeting. O'Reilly reports that he is using the maximum number of fish possible to address the questions being asked. There is no potential to do any more. Marshall and O'Reilly are to send O'Reilly's general strategy to O'Neil and Goff.

The issue of whether to keep Black River fish in the LGB was discussed. Three sites on the Black River were to be monitored and the data provided to Gibson. R. Jones reported an average of 17 fish per 100 square meters when all ages were combined. This is the highest concentration of any non-stocked river and the question was asked whether the gene bank be cleared of these fish. O'Reilly noted that the samples to date were comprised of relatively few families and recommended keeping a small number of fish in the LGB (these would be kept separate) for use when inbreeding depression accrues as discussed in his scenario for small populations. A report has been submitted by Bagnall regarding the movement of pre-grilse in the Little River. R. Bradford had previously recommended that phenetic data be compiled. O'Reilly agreed that this is important and suggested that life history and other traits also be compiled (e.g. scale patterns). O'Reilly will follow up with O'Neil to see what is being done and what may be possible. Discussion will follow in November.

Action Items arising

- J. Gibson is to provide Habitat Management with a list of aboideaus for potential fish passage evaluation. It was noted that Rick Devine prepared a report that might be of value.
- Gibson is to review decision tree for release rivers/hypothesis and framework.
- Committee exercise is to focus on prioritized threats to iBoF Salmon (led by Amiro and Whoriskey).

Overview of 2003 Activities

DFO SARA Funding

At the time of the last meeting, DFO had only been allocated emergency species at risk funding for iBoF salmon (minimal level). In August 2003, more funds were allocated and were directed towards projects that (1) had been risk managed and (2) were high priority and not affected by the delay. Specifically, monitoring, habitat, genetics, NS biodiversity facilities; NB biodiversity facilities; and C&P activities were supported.

Monitoring (Amiro)

Due to funding delays, this project has been risk managed from April-August using Abase funds. Upper Stewiacke and nine other rivers were surveyed. Four research documents have been prepared, and the status report submitted to COSEWIC in 1999 has recently been published in the Canadian Technical Series.

Amiro/Gibson have been funded to develop a risk analysis approach to identifying critical habitat for iBoF salmon. This will require population modeling and they hope to hire a term employee for this work in early November.

Amiro was asked by Jim Irvin (British Columbia) to contribute to a paper on the status of salmon in Canada (completion date of February). Amiro/Gibson contributed a poster on the status of iBoF Atlantic salmon to the American Fisheries Society meeting in Quebec City. The poster also included a preliminary estimate of iBoF salmon's probability of recovery.

Amiro reported that Mart Gross (COSEWIC subcommittee co-chair and plenary member) visited BIO this summer and spent considerable time with Division staff. Gross is drafting a new Atlantic salmon COSEWIC status report. Given the timelines involved, iBoF salmon will not be reassessed until Nov 04.

Monitoring (Jones)

Year three of the smolt project was completed (1500 were caught in total). Run strength was estimated as 8500 non-fin-clipped fish and 225 non-clipped animals were collected for the live gene bank with help from additional staff and Fort Folly First Nations. Two separate swims of Big Salmon River took place, in late July (10 fish) and early Sept (13+2 fish).

Fish Culture

For the first time, spring smolts have been brought into the LGB (for potential use for broodstock) and they have done well. Goff noted that caudal fin clips have regenerated on most of the fish.

Goff reported that 550 F1 pre-grilse were stocked into the Petitcodiac. At least one of the four acoustically tagged fish went past the causeway so they showed movement immediately and headed downstream.

Goff questioned the team on whether rainbow trout should be removed if caught. The team discussed whether or not this was a policy vs. ethical vs. science issue. Jones' group is not catching them so they are currently not being removed. Amiro asked if there is proof of rainbow trout causing a negative impact on salmon. Province (New Brunswick) directs that except for named areas (rainbow trout stock-out rivers), rainbows should only be removed until Sept 30. DFO science is already licensed to remove the trout but DFO should be making recommendations to the province if they think the trout are harming salmon.

Amiro will develop a rationale for maintaining or removing rainbow trout and if appropriate, DFO will recommend that the Province extend harvest dates to November 30th.

Genetics

Many iBoF salmon have been genotyped in 2003: 302 Big Salmon River wild captured fish were genotyped at 9 loci; 200 Stewiacke, 320 F1 Big Salmon, and 400 Stewiacke F1s were genotyped at 4-5 loci.

Samples from the Black, Economy, and Debert Rivers have been screened to associate individuals to their genotype for gene banking purposes.

For the Black River, mtDNA analyses will be the most informative. However, 150 samples have been genotyped and from inspection, they look like very few families. Southern Uplands samples have been analysed. MtDNA analyses show differences between inner and outer Bay of Fundy instead of Minas and Chignecto Basins discontinuity as previously reported by Verspoor.

Samples from 50 Cascade stock and aquaculture sites were genotyped to determine the origin (local or non-local) of broodstock. In all lab analyses, 15% redundancies are used to confirm findings. With respect to the efficacy of the mating plans and LGB, most of the lineages from the Big Salmon River have been recovered. Minto information has not yet been analyzed. Stewiacke River lineages were not well recovered due to variable family representation. However, these parents were spawned twice so there will be another opportunity to try and recover families.

P. O'Reilly is investigating cryopreservation of salmon from the gene bank. The only additional costs are the nitrogen (they are donating the space) and the storage

drawer. Cryopreserved sperm can be used to restore variability to populations but should not be used to restore populations (very difficult).

Harrington River samples have not been run; they were lower priority than 3000 LGB salmon that have already been run.
P. O'Reilly reported finding European salmon in Big Salmon River but cannot distinguish the non-European salmon from Canadian origin aquaculture salmon. This is why he is trying to better characterize the Saint John River strain.

P. Amiro asked if it would be better to only include fish with the putative iBoF mtDNA haplotype in the LGB since we cannot detect the locally-sourced aquaculture fish at this time. O'Reilly explained that with this strategy, hybrids would still be missed and these hybrids may be more numerous than expected since studies have shown that male aquaculture fish are more successful when mating with wild females than the converse.

P. Amiro was concerned with drawing inferences on the levels of aquaculture fish without supporting analyses and suggested that the scientific basis for the LGB may not be viable.

P. O'Reilly advised further assessing/characterizing local (non-European) aquaculture salmon. Although, the aquaculture industry should report any escapes, this seldom occurs. Kierstead suggested that there are many more escapes than those reported.

P. O'Reilly mentioned the situation in the US as they are encountering similar challenges. US colleagues are trying to use all of the historic samples available to identify pure lines and stocking origins.

June RAP
L. Marshall reported that RAP was well attended. Proceedings are ready and will be available from the CSAS website soon. If you do not have access to the web you may request a hard copy.

Conservation and Protection
J. Kierstead reported hearing of adult salmon in the Black River. Patrols are taking place to monitor habitat on the Big Salmon and Black rivers.

Fundy Park
A. Caissie reported that upgrades were made to the smolt wheel; 101 smolt were collected from the Upper Salmon River and transferred to Mactaquac. However, the fate of these fish is still uncertain. Electrofishing surveys for juveniles are complete. No young of year were detected in Upper Salmon and 3 were found in Pointe Wolfe. To date no adults were observed in either of Pointe Wolfe or Upper Salmon. No additional habitat work is being done until there is some direction on the interpretation of critical habitat.

Fort Folly

T. Nye reported on the testing (1-2000 m) of equipment (pingers) that was funded through the HSP program. Derek Knox (St. Andrews Biological Station) assisted. Receivers were not able to pick up the pingers as well as were expected (based on results of Lacroix work). This might have been due to time of year (e.g. phytoplankton, temperature etc). Detection broke down as distance increased. From 700-800 meters, they were only able to pick up 10% of the pingers. More receivers may be required to do the type of study envisioned. The larger of the two tags tested, performed fairly well from a bottom deployment (~30m from bottom). Nye thought there was too much noise in the top deployment. Nye is currently working on the data from Ile Haute (July). Environment Canada and DFO will both receive a copy of the data-report. P. Amiro requested that the report also include a recommendation and observed that the data will be useful for an interpretation of probabilities. Future work might benefit from the timely input of physical oceanographers.

Nye is unsure as to whether they will apply to HSP for 2004-05 and may pursue funding through the Aboriginal Aquatic Resource and Oceans Management (AAROM) program. However, Nye will keep in touch with Oceans/Habitat/HSP staff.

Electrofishing surveys on the Memramcook and lower tributaries of the Petitcodiac rivers continued this year but no salmon were observed. Kierstead suggested that C&P might be able to provide vessel-time if required for the contemplated kelt surveys.

DFO Socio-Economics

M. Rudd is attending recovery team meetings to get a sense of the issues associated with each species. He is currently involved with Atlantic whitefish and leatherback turtles and hopes to use them as pilot projects. Economic analyses will be required in SARA-compliant action plans, in the Regional Impact Analysis Statement (RIAS) process, and in the 5 year review of species status. Rudd is not yet sure how much detail will be required but thinks that recovery actions would first be generated by the recovery teams. He would then consider these actions and try to evaluate the impact of each of them for inclusion in the Action Plan. This process is still not well defined within DFO.

HSP Process and Guidelines

The Habitat Stewardship Program (HSP) review process was briefly discussed. It was proposed that a small committee be formed to review pre-proposals. Committee members are to include L. Marshall (DFO Science and Co-Chair), C. Myers (DFO Communication), K. Querbach (DFO HSP) and A. Hamilton (HMB DFO). Other team members interesting in serving on this review committee are to contact Marshall. Querbach is to send out information on the HSP to the recovery team.

Redrafting a SARA-compliant Recovery Strategy for 2004/05

The iBoF salmon recovery strategy will need to be revised by June 2005 (but 6 months are required for translation and federal signoff) to address recovery feasibility, long and short term population abundance targets, critical habitat, allowable activities, and timelines for action planning.

Prioritized List of Projects for 2004/05

The team discussed the 'Action Table' currently being used and tried to evaluate whether activities were (1) essential for recovery, (2) may promote recovery or (3) desirable. Projects not listed on the Action Table were also proposed. Comments for inclusion in the next draft are invited from RT members not in attendance.

"*Essential for Recovery*"

- adaptive strategies to monitor abundance at any life-history stage
- studies that address marine survival and potential causes of marine mortality, especially late stage, especially predators, but including parasites, toxins, vibrio
- temporal and spatial distribution model for post-smolts
- studies on kelts (e.g., proposal by FFHR) given that repeat spawning is deemed an essential to maintenance of iBoF salmon [Amiro/Gibson's analysis]
- historical scale analysis as possible means of addressing an environmental change
- identifying, maintaining or improving critical habitat (both freshwater and marine)
- analyses of environmental conditions associated with post smolt distribution, inc. assessment of availability of conditions previous to current population declines
- protection of critical habitat (both freshwater and marine)
- continuation of LGB/captive breeding program (in- & ex- situ) in support of maintaining a few genetically diverse populations
- design, implementation, and monitoring the success of a reintroduction program
- discrimination of North American aquaculture fish from self sustaining pops in the Bay of Fundy
- research into cryopreservation
- targeted stewardship on critical habitat by relevant stakeholders or related to other threats identified
- development of population reference levels for recovery & monitoring
- communications network in support of the RT
- maintenance of RT

"May Lead to Recovery"

- studies targeting sources of freshwater mortality (early stage) & smolt viability – to address lingering freshwater threats including toxicology, pathology etc.

"Desirable"

- identifying potential marine threats and post migration distribution using tags (controlled experiments)
- river specific compliance patrols through the Fisheries Act (exploitation is not a threat to mortality but the residual population could be impacted in by-catch fisheries)
- reviews/ update of stream survey information, map & model productive capabilities
- protection, maintenance or enhancement of non-critical habitat (freshwater and marine)
- framework to evaluate stewardship proposals, e.g., cost/ benefit for the profiling of issues and appropriate funding
- communications to general public on iBoF salmon
- development & deployment of new tech tags e.g., magnetic bar codes, for easier recovery of identification
- tests of smolt viability/ lingering effect in the marine environment
- communication and collaboration with American colleagues

Repository for Recovery Team Minutes

Information item: Minutes from RT meetings will appear annually in the DFO proceedings series. Hard-copies will be available.

Other Items

A proposal to grow out 40000 low priority Stewiacke 0+ par (that would have otherwise been released this fall) into Chiganois, Debert, and Folly rivers (high priority parr are being returned to the Stewiacke) was considered.

It was proposed that a high proportion would be tagged and could be used to evaluate survival to adults in 2005. The project would follow smolts coming out of the Stewiacke this spring. The project could enhance the interpretation of returns from smolts enumerated/ released in the Stewiacke and Gaspereau rivers in 2004. There was some concurrence that this was an opportunity but there was some discussion on where they should be released, and to how many rivers. One suggestion was to restrict the 40000 to just one of these rivers (Chiganois is not an option). This would facilitate an the assessment of adult returns given that return rates may well be less than the decade-old 0.2% return rate for the Stewiacke, (i.e. 40 fish @ 0.1% of which only 5-10 might be captured as a basis for the estimate).

Amiro suggested that every focus be on marine survival so multiple tagging of these individuals may be useful. The attributes of floating radio and acoustic tags (new technologies) were discussed. The LaHave River was suggested as a control. Amiro will develop a framework/experimental design for discussion at the November meeting indicating possible benefit from these fish.

Proposed Date for Next Meeting

November 20 and 21st for Planning Group and Recovery Team, respectively.

Synopsis of November 21, 2003 Meeting

Members of the Inner Bay of Fundy Salmon Recovery Team met on November 21, 2003 at the Wandlyn Inn in Amherst, Nova Scotia. Please see Appendix 7 for a list of participants. Welcome, opening remarks by the Co-chair were made. Please see Appendix 8 for a copy of the agenda.

Agenda Items

Review of Agenda

The only changes made to the agenda were the removal of a number of items due to some invited participants not being present. It was noted that many items were covered on Thursday, November 20 at the Planning Group Meeting.

Review of Planning Group and RT Minutes and Action items from September 30, 2003

Website and FTP site. The website is complete except for translation. Science has agreed to hand the site over to the communications sub-group for completion.

Recommendation for mitigating inbreeding for small rivers (development of a mating strategy). Plans for a mating strategy had to be altered because the small stocks that were housed in Coldbrook were not of the sex ratio that was required. The primary problem was a lack of females. Some crosses were made between rivers. This is usually not done but in this case out-breeding was less of a concern than inbreeding. The project which is being done will evaluate the difference between the inbred and out-bred progeny.

Experimental Design for F1 pre-grilse release by Wissink and O'Reilly. This is complete and was presented at the Planning Group meeting.

Marshall and O'Reilly are to send O'Reilly's general strategy to O'Neil and Goff. This is a housekeeping item and not yet off the ground. However, it is an on going activity for the Planning Group who will continue to look at it.

A list of aboideaus for potential fish passage evaluation was provided to Habitat Management by Gibson. This list will be attached to the November 21 Planning Group minutes.

Gibson's review of a decision tree for release rivers/hypothesis and framework is not yet complete. A design is required. The proposal requires more thought and the Chair, L. Marshall has agreed to champion this.

The committee exercise to focus on prioritized threats to iBoF salmon, led by Amiro and Whoriskey has been deferred until it is peer-reviewed. The Critical Habitat issue

has not yet been resolved and is a big part of this. The focus will be on threat analysis.

Discussions regarding the compilation of phenetic data are ongoing. O'Reilly will follow up with O'Neil to see what is being done in this area and what may be possible.

Amiro is to develop a rationale for maintaining or removing rainbow trout and if appropriate, DFO is to recommend that the Province extend harvest dates to November 30th. No specific action has been taken with outside parties to date. Science has the potential to do this and it should be discussed with the provinces present. This discussion was deferred to a time where provinces present. It was suggested that NB may be online with this but the issue should be discussed further.

Querbach has sent out HSP information to the Recovery Team.

Discussions are on-going regarding the experimental design for the release of the low priority Stewiake 0+ par. Amiro will develop a framework/experimental design indicating the possible benefit from these fish. Rivers to be used are yet to be finalized. There was a suggestion that smaller systems should be used. As well, community involvement for things such as monitoring would be desirable. The question was asked whether other groups such as the Cobequid Salmon Association would be involved. Other groups are not yet involved but this project is still 1.5 years away.

Overview of 2003 activities

Monitoring & Research
See attachment 5 for overview and presentation. The June RAP resulted in 4 Research Documents, 3 of which are completed. There was as well a poster developed and presented at the AFS Annual Meeting in August and the DFO National Science Workshop in November which suggests that at existing marine survival, recovery is impossible. Peter noted that there should probably be an effort to standardize the format of information collected by all iBoF stakeholders.

Critical Habitat initiative
Definition and interpretation is a national priority (Amiro). A modeling project has been funded and results will contribute to the development of a threat analysis model. Scale pattern analysis to detect possible changes in marine growth (and possible migration) is moving ahead. Historic samples versus contemporary samples are being looked at to determine if there are changes in the frequency of local migrators (method being used is not environmental related but growth pattern related).

Electrofishing density surveys
Graphical presentation (attachment 6, Amiro) indicates LGB supported rivers vs non LGB (few if any juveniles by comparison). It is unlikely that the survey will be repeated in 2004.

Population dynamics model
(Attachment 7, Amiro) also depicted on poster, uses return rates from smolt to adult survival – 5%, 1966 to 1971 – the return rate for the 2001 smolt year class was 0.84%. Survival of repeat BSR adults averaged 0.494 from '68 to 72, and is now negligible. Results indicate that recovery of the species (BSR pop) is not possible – maintenance and survival in freshwater through the LGB is feasible, (presumes that smolts can be produced from fry), that habitat is fine and that research priorities should be in the marine environment for which there is little if any funding.

T. Goff noted that the Mactaquac program is duplicated at Minto to ensure that if something happens at one hatchery then we will still have a supply of fish. Attachment 8 provides a summary of fish on hand and distributed. In response to the question re: status of Cobequid hatchery it was noted that it was given up by Science and is now in the hands of DFO Real Property for disposal. Goff noted that there was 250 k unfed fry to be distributed in '04, the location of which was to be determined at April Planning Group.

BSR Smolt Assessment
R. Jones provided a power point (attachment 9) presentation of the field program on the BSR including data background to a smolt output of 9200 non ad-clipped and 6100 ad-clipped (fall parr); a point estimate of 21 adult returns to the river in 2003 comprised of 3 salmon and 18 grilse of which 3 were adipose clipped (hatchery origin) and 15 were wild. Rivers electroseined in 2003 were Big Salmon River (12 sites), Black River (3 sites), Demoiselle Creek (3 sites) Pollett River (4 sites), and Little River (4 sites).

Fundy National Park smolt and adult releases
R. Wissink indicated that a smolt wheel captured 96 Upper Salmon River fish which were transported to Mactaquac. A portion will be kept for the LGB and the rest will be released next year. Electrofishing - 6 sites on each of the Point Wolfe and Upper Salmon river – yielded only 4 parr, and 24 parr respectively. F1 releases – 286 in mid October split between an upper and lower site with 24 ultrasonically tagged fish. Tracking has been done since, along with a swim through. The higher the fish were placed in the system, the greater the percentage that stayed in the river. Three of four immature fish moved down and out of the system. A swim thru on Nov 3 yielded sightings of only 67 (est. 100) of the 286 grilse released. To date there was no evidence of spawning. Genetic information of juvenile collections in 2004 will be used to evaluate the contribution by these adults. Receivers will also be left in some of the larger pools to monitor over the winter. An interesting side to this was that precocious parr appeared around the females.

Telemetry equipment in the Bay

T. Nye provided summary results (Attachment 10) of the Bands efforts and conclusions regarding the utility of VR2s in the open bay; i.e., large receivers (adults) should normally be not more than 1200m apart, and within the Minas Basin (Isle Haut), not more than 600m. The small pingers applied to smolts were good for only 400m. Vemco suggested that the reduced ranges could be due to acoustic noise in ocean, or electrical interference. Waters tested were not noted to be turbid. Bottom deployment is much preferred over surface (10m from top) deployment which has more background noise.

NS Power – White rock smolt counts

C. Burgess discussed the decommissioning of the old fish ladder at Whiterock and evaluation of efficacy of the new fish ladder and downstream passage of smolts. Upstream passage of adult salmon (14 in 2002 and 7 in 2003) and gaspereau has been monitored. Visual surveys were to follow to determine the presence of salmon and their use of the potentially "new" but spring flood-scoured spawning habitat below the new fishway.

Studies on downstream passage (Attachment 11) began in 2002 and were continued with the refinement of a deflector and placement of a bubble screen at the upstream end of the power canal (bypass #1 proximate to the upstream fishway) in 2003. Bypass #2 and #3 are at the downstream of the canal to either side of the draft tube (turbine intake). Bypass efficiencies were estimated using 1500 hatchery reared smolts released at 3 upriver locations each year. Efficiency increased after the modifications in 2003 with about 66% of recovered smolts appearing in bypass #1, up from 12.6% in 2002. An average of 40.4% of tagged smolts was estimated to have used the power canal in 2002; only 28.6% used it in 2003. (It was suggested that cold temperatures may have been a factor for reduced numbers in 2003).

Plans for 2004/05 include restoration of substrate, stream banks, riparian vegetation below the new fishway and outreach, (possible HSP proposal) and continued monitoring and possibly electro-fishing.

Genetics & Fish culture at the NS BFs

S. O'Neil provided a summary overview (Attachment 12) of collections and holdings in 2003. Stewiacke River appears to be devoid of wild founders given that only 17 parr were collected and all were of LGB origin. One possibility for new founders would be from the smolt wheel were it to be installed in 2004.

O'Neil reviewed the numbers of salmon brought into Coldbrook, numbers spawned and numbers released. Mortality in 2003 occurred after a jumping fish knocked a valve causing it to shut off the water. The valve was replaced to prevent future occurrence. The largest percentages of fish go out at early stage to increase exposure to wild conditions. Gaspereau River: parr collected in 2001 for adult program in 2003; there were only 14 returns (broodstock) in 2002 and 7 came in 2003.

Ongoing projects (2003):
Previously spawned and reconditioned adults were released into spawning channels improvised in large circular ponds at Mersey where they appeared to spawn successfully demonstrating that repeat freshwater captive grown females CAN spawn "naturally". Egg viability was to be followed. This was a follow-up to the evidence that no juveniles were detected in 2003 resultant of adult releases to Salmon River, Truro, in 2002. It is not known from tracking data if fish stayed or left the river or if the absence of juveniles could have been the result of a 100 year flood in late March 2003.

- precocious parr were captured from Gaspereau River to increase effective population size at spawning
- -examination of diet in relation to egg quality (membrane strength)
- -exploring capacity to hold eggs at Mersey
- -cryopreservation of sperm was conducted by Patrick O'Reilly
- -an experiment conducted to evaluate inbreeding vs outbreeding depression in other Minas Basin populations
- -major site renovations.

In Summary, the majority of individuals are being released at early stages; discussion of release sites on the Stewiacke River; different stages released at different sites; juveniles distributed widely but concentrated within one or two tributaries, in part because of access.

Captive Rearing of Big Salmon and Black River origin salmon at Mactaquac
T. Goff provided a handout of stock distributed from, collected and on hand at Mactaquac (Attachment 8). BSR collections included 208 "wild" smolts and 440 "wild" parr. BSR broodfish in 2003 numbered 250 females and 260 males 196 immatures which resulted in 100 HIGH priority spawnings, 50 MEDIUM priority spawnings and 100 LOW priority spawnings

Black River first time spawners on hand were 43 female, 30 males and 69 immature. Relative to the BSR, the high incidence of immaturity suggests a greater tendency towards later spawning, i.e., 2SW fish

Distributions totalled ~300 k unfed fry, 55 k fall parr, 21 k 1+ parr, ~14k and 1+ smolt – most to the BSR. The Little River received 549 pregrilse and the Point Wolfe received 286 2-3 kg grilse.

For release in 2004 are 375,000 HIGH priority unfed fry for the BSR; an estimated 250,000 LOW priority fry are available for release in 2004.

Goff indicated that an additional river would be useful for stock out of NB Chignecto Bay (BSR) fish and queried the possibility of adopting an NS river, e.g., Maccan or River Hebert on the Cumberland Basin. There was no conclusion to the discussion and no agreement to expand the range of NB populations into NS.

Genetics and cryopreservation
O'Reilly provided a power point presentation (attachment 13). Topics included a flow chart of products from founder broodstock and the potential to trace subsequent progeny; the calculation of mean kinship and assessment of parentage; steps being taken to mitigate the loss of wild fitness (wild exposure, rearing practices to mimic wild, minimize variation in family size, mean kinship breeding program to minimize inbreeding and loss of genetic variation AND, cryopreservation of sperm which is intended to minimize genetic change between founder and subsequent generations of LGB populations.

O'Reilly as well reviewed mtDNA information at hand re: the unique haplotype for iBoF salmon and the SNP 'fast" analysis for determining potential source populations (attachment 13). The follow-up to this work will involve the search for older archived DNA (scales) in the NB Museum.

Fort Folly Habitat Recovery & AAROM initiatives
T. Nye gave a description of the AAROM Program and its roles/ responsibilities (see Attachment 14). This is only available through an aggregate of Bands – currently FFFN is working with Bear River and Annapolis Bands on an iBoF proposal which would bring each Band to the RT. Nye is resigning from the Band's staff and suggested that we may be contacted re: someone else participating in the RT.

NSDAF - absent

NBDNRE – absent

Cumberland Co. River Enhancement Assoc. absent

Upper Bay of Fundy Biosphere Initiative Society –absent

DFO Socio-economics –absent

DFO Maritimes Fishery Regulations
G. Stevens reviewed progress on the draft RIAS – required to change fishing regulations. The iBoF RT has supported this and was in favor of making the species list all-inclusive with exceptions. NB is almost ready to support this and PEI is the only one that we still need support from.

DFO Conservation and Protection
V. Smith provided a verbal and written report on C&P activities (Attachment 15). The Digby, Kentville, Parrsboro and Saint John detachments all have a part in the iBoF. On the Gaspereau River there were a lot of patrols done in the *square net* gaspereau fishery. A condition of licence is that their nets and poles be locked down at night. The lower area of the river was worked a lot this year to ensure that no poaching took place. Some habitat charges were laid with hog farms – EC does chemicals, DFO does silt. The weir at Morden was regularly watched because some salmon are caught and released there.

The Saint John office has been low on staff and between Parrsboro and Saint John few if any patrols were conducted. There was a report of salmon being 'jigged' in the Black River but there was no investigation because of the workload associated with shellfish disease. It was noted that C&P really need to know what rivers they should focus their investigations on.

There were patrols out of Parrsboro: 4 rivers patrolled by kayak so as to inventory location of where salmon could be. It is hoped that more of this work can be done earlier in 2004 (funding late in 2003). A public education program was developed and will be going to the schools next year (grade 8). Signs have been posted to prevent the intentional and non-intentional capture of salmon. Parrsboro had one violation from a logging operation.

Questions ensued re: whether DFO is looking for illegal introductions of aquaculture fish to outer Bay cages (trucks are inspected when seen); where the funds go when someone is charged and found guilty (questioner suggested that the fishery officers need to suggest to the judge where fines should be directed) and, ATV infractions esp. on the Pt. Wolfe River (destruction of fish habitat is a hard thing to prove-signage can be effective.)

HSP Proposals for 2004

P. Amiro reported that pre-proposals were discussed with a small group on Tuesday, November 18th. A total of 4 proposals were received and reviewed by the committee (Querbach, Amiro, Hamilton and Taylor): 1 high priority and 3 medium priority projects. All projects seemed to fit into the "desirable" for recovery category of the RT priorities.

Projects were:

1. Survey of Hants County Barriers to Migration (Ecology Action Center)- intention is to raise the level of public awareness re: importance of the lost interfaces between freshwater/saltwater and its potential contribution to the overall productivity of the Bay. The Committee had questioned the direct utility of the project to recovery of Atlantic salmon.
2. Maccan River Project (Cumberland County River Enhancement Assoc.)- seeks to identify primary salmon habitat and take awareness to land owners of the impact of land practices and value of e.g., fencing of pasture adjacent to Atlantic salmon habitat.
3. Classroom Education Package through Fundy National Park (Fundy Guild) – seeks to increase respect in youth for habitat for salmon.
4. Development of community habitat stewardship for area below Whiterock, Gaspereau River (King County Wildlife Association) - -involves 2.5 km of river habitat below the new fishway.

All of the proponents were recommended to develop a full proposal. Suggested that the Communication group recommend priorities for stewardship initiatives as it was felt that the proposals all were focusing on 'essential for recovery".

Communications and Public Awareness Technical Committee
Marshall gave a brief overview of the group's deliberations the day previous. This included a review of components of a draft plan (attachment 16) and the target audiences...stakeholders, Media, Academia, school children, general public etc. Much effort has been directed towards school children, maybe more effort directed at people having possible direct effect on salmon. There was also thought that the group should be more proactive in involving the media. Timelines on activities were requested – e.g., – release of fish, any event that would be media worthy.

AMEC (Petitcodiac smolt trials) – absent.

Recommendations from Planning Group

Monitoring and research: Proposed DFO science priorities/ action items for 2004 were provided by Amiro (attachment 17). They included data and analysis (recovery potential reference points, Critical habitat modeling, scale analyses and threats analysis modeling); Field work for Smolts (proof of freshwater habitat production, evaluation of LGB storage approaches and smolts for research); electrofishing (11 rivers only and re-evaluation of BSR sampling strategy); adults (BSR, Gaspereau and rivers of opportunity ala C&P/ local collaborators).

Proposed Long Term Projects were in freshwater best restricted to Great Village or possibly the Portapique and Folly (argument made however that s/r parameters and s/r monitoring in NS would be of small incremental gain). For the marine environment research is needed to move from maintenance to recovery. No tracking or trawling proposed in absence of existing data and analysis, rather, smolt viability studies (3 wild and 1 hatchery) coupled with toxicology and r&d for smolt tagging with metallic detectable and floating radio tags.

Genetics – ref. O'Reilly's presentation (attachment 13). Calcien marking trials are on hold for now because results coming from the states show that calcien may be detectable for little more than a year. Patrick noted that the LGB program decreases the wild fitness of the fish over time and that various methods are being incorporated to minimize the loss, e.g., cross (out) breeding, placement of eyed eggs into the wild rather than waiting until they are fry. As well, cryogenic preservation of sperm is being tested to minimize the genetic changes between founder and subsequent generations of LGB populations. Currently there hasn't been any success in freezing eggs and then thawing.

Inner Bay of Fundy salmon mtDNA is different from outer Bay of Fundy salmon. MtDNA analysis is more cost effective than nuclear DNA analysis. European ancestry has been detected in the Magaguadavic River, Black River and Upper Salmon River.

O'Reilly was asked if one can determine aquaculture fish among iBoF salmon to which the answer remains no, i.e., individual Saint John River salmon are not that different from the iBoF population, esp. those (the majority) that do not carry the unique haplotype.

Process for redrafting of SARA compliant Recovery Strategy

RT was reminded that the DFO Species at Risk Office target date had been Jan. 1st, 2005 (that allows 6 months for translation). The RT should decide whether it wants the strategy contracted out or not. Discussion went both ways given that the knowledge base is largely resident within the RT. An external contractor would have to be objective and work closely, perhaps only with an RT sub group, in both the structure and word smithing. The consensus was that a contractor would minimize everyone's work load and that the arranger/ facilitator would be K. Querbach of the SAR Office.

Other items

Tidal barrier issue. A. Hamilton noted that D. Hache (Moncton) is center to the debate, and that concerns over lost fish habitat has been elevated in importance by the RDG. Stewardship will be linked with the issue. (*Action: Hamilton suggested that tidal barrier issues (salt marsh tidal passage) be included among the high priority research issues of a SARA compliant strategy n Plan.)*

The co-chair volunteered to update the Appendix of iBoF Implementation plans relevant to recovery objectives.

Date for Next Meeting

April 29 and 30, 2004

ATLANTIC WHITEFISH CONSERVATION AND RECOVERY TEAM

INTRODUCTION

The goal of the Atlantic Whitefish Conservation and Recovery Team meetings is to provide members with information regarding progress made in the assessment and improvement of the status of the Atlantic whitefish. The meetings provide a framework for identifying factors that may influence Atlantic whitefish habitat and abundance so that strategies for conservation and restoration of Atlantic whitefish populations can be developed. An important aspect of these discussions is the effort to raise public awareness of the Atlantic whitefish and the issues which must be considered in this species' recovery from its endangered status.

Members of the Atlantic Whitefish Conservation and Recovery Team met on April 10, September 25, and November 27 in Bridgewater, Nova Scotia. The goal of these meetings was to provide information about the assessment of Atlantic whitefish, its' habitat and to set goals for the conservation and restoration of Atlantic whitefish populations. Participants also discussed and reviewed efforts to raise public awareness of the Atlantic whitefish. Following is a formatted and stylized synopsis of these meetings.

Synopsis of April 10, 2003 Meeting

Members of the Atlantic Whitefish Recovery Team met on April 10, 2003 at the DesBrisay Museum in Bridgewater Nova Scotia. See Appendix 9 for a list of participants. The meeting opened with introductions and a review of the agenda. Several items were added to the agenda at the meeting. See Appendix 10 for a copy of the agenda.

Agenda Items

Review of Action Items from Previous Meeting

The issue of water quality in the Atlantic Whitefish Watershed area was raised. Water quality reports will be obtained from M. Fox, representative for the Town of Bridgewater, and from Dr. M. Brylinsky of Environment Canada. R. Bradford will meet with Dr. Brylinsky and M. Fox to harmonize the separate reports of water quality data for the watershed. M. Fox will provide an overview of the Town's water quality data at the September meeting. He indicated that he is willing to assist anyone doing environmental studies in the watershed area. It was also noted that in order to charge someone with polluting a watershed, there needs to be historic water quality data for at least 5 years.

Environment Canada will provide the Recovery Team (RT) Chairs with Habitat Stewardship Program (HSP) proposals and final reports/products. K. Querbach will ensure that they are made available to the RT.

The Nova Scotia Power Incorporated (NSPI) Tusket HSP project report is now available. Bradford and Querbach have assisted in the preparation of Nova Scotia Power (NSP) and Nova Scotia Department of Agriculture and Fisheries HSP proposals for the coming year.

Bradford presented a report summarizing the Aboriginal Traditional Knowledge (ATK) survey conducted in August of 2002 within Acadia First Nation. Please see attachment 18 for a copy. Sixteen band members (elders) were interviewed to document their knowledge of and personal experience with whitefish. Two individuals reported catching whitefish 50 and 60 years ago. One was from the Yarmouth Reserve, the other from the Wildcat Reserve. Although other members were aware of whitefish, no distinction was made between lake and Atlantic whitefish.

DFO SARCEP funding

Funding was anticipated to be equal to or greater than that of '02-'03. This however, is unlikely to be true - funding decisions are as yet incomplete but funding is unlikely to exceed that presently allocated to the Region (~25% of the anticipated Science budget). No monies were received for whitefish specifically, but some of the funding for Inner Bay of Fundy (iBoF) salmon has been redistributed to whitefish. Thus DFO

will only have capacity for culture of what are already on hand, some monitoring, and a modest amount of genetics work.

Report from the Communications and Public Awareness Sub-committee

The members of the sub-group met by conference call (2) to discuss strategies to increase public awareness of the Atlantic whitefish as well as its' present status. (See attachment 19 for notes and a list of participants).

- There have been 2000 magnets ordered which will be used in concert with other initiatives.
- The NS Fish Series Atlantic Whitefish Fact Sheet has been printed (5000) and is available for broad distribution. (Comments were complimentary but wondered at the wording that Atlantic whitefish was considered to be an excellent sport fish).
- There has been some movement to build a dedicated Species at Risk (SAR) living exhibit at the Shubenacadie Wildlife Park (EC/PARKS) with a request to incorporate whitefish. The display would also have some travelling/portable components as well as materials for teachers e.g., Fact Sheets. Teacher packages, CDs etc.,
- Nova Scotia Power has a HSP proposal to develop a pamphlet/poster for distribution to the surrounding community. The thrust would be to relay information to educate and inform the public about Atlantic whitefish with a focus on the threats (habitat quality, exotic species etc.) to the successful reintroduction.
- The Communications sub-group looked into printing ads in the local newspaper with general information on whitefish. This did not work out due to timing but will be pursued in the present fiscal year, possibly in May and associated with yearly angling closures. It was noted that fishing has already started in the Watershed (illegal).
- C. Myers has approached the Science Editor of the Chronicle Herald and they are willing to dedicate a story to the Atlantic whitefish.
- In the next month C. Myers will be contacting 'Country Canada' and 'Land and Sea' to determine their interest; Cynthia Kent is interested in doing another article on whitefish.
- The DFO Maritimes Species at Risk web-site will have a page dedicated to whitefish. However, if the team wants something more, someone from the team will need to provide a proposal to the SAR Office to have it funded. (There are no guarantees that it would be funded). In this context it was noted that there are two sites housed at Acadia University that may be an alternative option and which do not have 'official languages' and 'common look and feel' issues.
- The DesBrisay Museum is finishing up a teachers kit which will be distributed to schools in the south shore.
- There is a need to increase visibility in the community, and for a sub-group member linked with the community. Products should be developed and tailored for the people of the Petite. The initial contact in terms of community capacity

must be good, as there is likely to be only one chance. M. Elderkin will send what they have for the Coastal Plains Flora Project.

- There is a need to know "entry points" well in advance of activities (i.e. - fish appearing at the Wildlife Park) if Communications is to capitalize on the event.
- The communications plan will be developed with or without funding. For '04 it was suggested that someone develop a 'community stewardship' project for submission to the HSP.
- There is little visual documentation of the recovery process available, although D. Hasselman has lots of video of the whitefish from embryo stage up. Discussion ensued on the suggestion of having a large road sign on Highway 103 indicating the Petite as being "home to the Atlantic whitefish" (something like some others in the province showing a special aspect). Such a request usually originates from the municipality and is passed to the province for development of signage.

Need for Recovery Team Information Repository

The possibility of a DFO in-house File Transfer Protocol (FTP) site was discussed. This site could be used in conjunction with the public communications activities.

Progress report on socio-economics

This item is deferred as M. Rudd not able to attend meeting but some discussion was held on the outline of the project:

- Some activities seem complimentary to some of the science work that will take place.
- Relevance of an adaptation to Objective Based Fishery Management?
- Will the Action plan have target numbers by which to base a successful recovery?
- Clarification on the purpose of the proposed project and how it is a socio-economic analysis.
- Noted that the proposed project has yet to be discussed with the RT or scientists and suggested that the work isn't a priority at this time, however, without the benefit of having M. Rudd to explain the project we cannot make an informed decision. M. Fox noted that the Petite Watershed may be re-designated in the future, and if it is, a socio-economic analysis will need to be done. This will be done by a third party (this could be beneficial to the team). L. Marshall will meet with M. Rudd to get a better understanding of what is proposed in light of the RT objectives [involve town of Bridgewater]).

Update on Web Publications by Clair et. Al.

L. Marshall gave a brief summary of this work. The model indicates that there is no news in terms of pH. With the continuation of a 10% reduction in sulfate emissions, the pH of the Tusket would recover by 2060. Base cations will not recover until the end of the century. The Petite is not as impacted as the Tusket.

Letter of Interest for the Display of Atlantic Whitefish at Huntsman

If an aquarium display of Atlantic whitefish were allowed, there would need to be a number of guidelines in place in order to convey the intended message. For example, concerns were expressed about the message being sent with a "species at risk" in an aquarium. The suggested solution was that no wild fish to be used in displays. There should be a disclaimer to say that fish are captive-reared progeny and that they are a significant step in the recovery of the species. Other practical considerations included moving juveniles rather than adults, as they seem to be the most resilient. A test tank will be set up at Mersey to scope conditions that might present problems for public displays. Other guidelines include:

- Fish are not to be released into the wild
- Requesting parties must demonstrate their containment capabilities
- A license to move and hold the fish must be obtained (in the case of holding the fish it is required yearly)
- The final disposition of the fish must be included in the license
- Fish are for display only, i.e. cannot be bred for research
- Only juveniles less than age 1 to be made available
- Tissue sampling not permitted
- Proper disposal for any mortality must be available
- Requesting parties must demonstrate expertise and be a reputable institute/organization
- Only allowable after review and recommendations of RT
- Water quality monitoring will be required while the fish are on display

The communications sub-group will build on this list with things the applicant would be required to do in terms of outreach.

Recovery Objectives and Action Plans Review

The table of recovery objectives and action plans was reviewed. See attachment 20 for a copy of this table.

Other Items

Sea Run Speckled Trout

A request from the Petite River Salmon Group to have NS Department of Agriculture and Fisheries stock the Petite with approximately 2000 sea-run speckled trout was received at a recent RFAC (Recreational Fishing Advisory Council) meeting. At that meeting the Province indicated that they would bring the proposal to the whitefish RT for discussion and recommendations. D. Bell of the Petite River Salmon Association indicated that the approval of the request would increase participation in their group and provide angling opportunity in the main river, a directed effort away from known whitefish populations. Bell noted that since there were no whitefish caught in the main river the impact would be non-existent and that historically whitefish, salmon, and sea-

trout all occupied the main river. Discussion ensued on the potential risks of introductions of stocked trout and non-indigenous species such as smallmouth bass and chain pickerel to whitefish populations, particularly the young stages. It was noted that:

- Salmon had been stocked up until 2 years ago and speckled trout are stocked annually in several lakes below where whitefish occur.
- Trout to be stocked would be approximately 20cm in size, introduced to the lower portion of the main river in the fall, and adipose clipped. Many of these fish would potentially be angled the following spring in the lower portions of the river.

It was suggested that at this point, with the whitefish anadramous population unknown, stocking would optically be a poor idea. Additionally, past stocking activities should be reviewed.

J. LeBlanc indicated that similar sea-run enhancement programs in neighboring watersheds such as the LaHave, Broad, Jordan, and Clyde rivers have been very successful and supported by local angling associations. The whitefish RT decided to defer recommendations on a sea-run speckled trout project until the fall meeting when all stocking practices and options could be reviewed.

Conservation License Plate
The Nova Scotia Conservation license plate is now available for $70, with a portion of the proceeds going to a NS conservation fund.

Summer Student
NSDAF summer student is to work with municipalities on water quality issues. It was noted that they would like to have a GIS database developed from the work.

Fish Passage
Fish passage on the Petite Riviere is vital to developing an anadromous run and monitoring of same. It was noted that Crousetown is at the top of the list for passage and monitoring. Fancy Lake is secondary and requires careful consideration, as there is the possibility of providing access to invasive species. Anadromous expression is assumed to be inherent in landlocked populations and could conceivably express itself over 2-3 generations. DFO is to review status of the Crousetown proposal and conceptual plans. R. Bradford is to review criteria for introducing landlocked populations to anadromous habitat.

Additional Water Quality Testing
The town of Bridgewater has an opportunity to obtain two 'advanced hydrolabs' for water quality testing and is seeking a letter of support from the RT. A letter was drafted by M. Fox and sent without RT signatures.

DFO Proceedings Series
Given the need for readily accessible information on the progress of Recovery Teams, it has been suggested that RT meeting summaries (minutes) be published annually in

the Canadian Science Advisory Secretariat (CSAS) Proceedings Series. The document would include minutes of all other Regional RT's and would be available to the public.

Next Meeting

September 24, 2003 in Bridgewater

Synopsis of September 24, 2003 Meeting

Members of the Atlantic Whitefish Recovery Team met on September 24, 2003 at the Wandlyn Motel in Bridgewater Nova Scotia. Please see Appendix 4 for a list of participants. The meeting opened with introductions and L. Marshall informed the RT that he would be stepping down as the co-chair. The new DFO chair will be I. Marshall, A/Manager, Yarmouth area office.

Agenda Items

Review of Minutes & Action Items

Small changes were made to the minutes from April 2003. The following action items from the previous meeting were completed:

M. Fox made the suggestion to the Town of Bridgewater that a road sign indicating the Petite being "Home of the Atlantic Whitefish" be installed and the Town supported the idea. The highway sign will be prepared as soon as the wording is complete. He also provided an overview of Town's water quality data. The data was provided to R. Bradford.

M. Elderkin sent the website address for Atlantic Coastal Plains Flora to the RT.

J. Whitelaw set up an experimental display of whitefish to anticipate potential problems with holding whitefish in an aquarium for public display.

These action items were outstanding as of the September meeting:

The creation of a sub-group to begin planning a proposal to meet the needs of the municipalities for '04-'05 has been deferred until the next meeting as has the discussion of water quality reports from Dr. Brylinsky. The meeting between R. Bradford, M. Brylinsky, and the Town of Bridgewater to harmonize the separate reports on water quality data for the watershed has not yet occurred.

DFO is to review the status of the Crousetown proposal and conceptual plans. R. Bradford will review criteria for introducing landlocked populations to anadromous habitat at the fall meeting.

HSP Process/Guidelines for 2004/05 Project Development

K. Querbach presented an overview of the HSP for species at risk and provided information and guidelines for the submission of project proposals. She noted that the stewardship project including both coastal plains flora and whitefish in the Tusket system might be a good fit.

There was some interest in defining the common issues (priorities) of the whitefish RT and the Coastal Plains Flora RT with an eye to a possible common front. The DFO

co-chair, I. Marshall, is to discuss with M. Elderkin and S. Boates what might be appropriate.

Pre-proposals are to be submitted to the RT by November 15 and full proposals are to be in to Environment Canada by December 12. All proposals need to be ranked by the RT.

In the fiscal year 2002-2003 there was $513K for all HSP projects in the Atlantic Region. Whitefish, in competition with all Atlantic Region HSP projects, captured approximately 10% of the funding (2 of 19 projects in NS).

Applications to assist in the development of plans for re-introductions may or may not be approved depending on the priority given by the RT and the involvement of the stewards.

RT review of pre-proposals
In 2002, the review team consisted of the DFO RT co-chair, DFO HSP coordinator, and a DFO Science and Habitat Management representative. After discussion it was decided that representation in 2003 should additionally consist of a DFO Science person independent of the DFO co-chair role, a NSDAF representative (J. LeBlanc), and a representative of the RT's Communication and Public Awareness Subcommittee (CPAS). CPAS will appoint a participant. Applicants to HSP cannot take part in reviewing their own proposal. It was noted that it would be beneficial to get the HSP information out to the general public/groups. K. Querbach will look into the availability of funding to spread the message regarding the HSP and projects of interest to the RT and discuss this within CPAS.

Activity Updates

DFO Science – (Bradford/Whitelaw/O'Neil)

D. Hasselman's thesis was successfully defended. It made a significant contribution to the understanding of the life stages of coregonine fishes. 'Draft' manuscripts of the primary publications from Dan's thesis are expected to be available this fall.

There is now a snapshot of the fish assemblage on Anderson Lake from baseline gillnets and water quality surveys. R. Bradford will give a summary at the November meeting.

The Tusket-Annis lake survey to assess the effects of chain pickerel introductions on native fish assemblages is complete and is being analyzed. A report will be produced and results are being presented at a DFO National Science Workshop in November. Preparations are now underway for autumn trap netting (with regular checks to avoid possibility of any mortality) to monitor abundance and collect an additional 20-30 broodstock. Salinity and pH trials will be done this fall.

Trials will begin this fall to determine the viability of using pingers for tracking of fish. 'Dummy' pingers have been purchased and will be surgically implanted into some fish to test the fishes' capacity to carry and normalize. There will also be a first assessment of the potential to artificially cross lake and Atlantic whitefish and subsequently examine physical and genetic characteristics.

Otoliths from a fish caught by D. Bell in the main stem Petite, May, 1998, have been assessed and initial isotope analyses indicate that the fish had protracted exposure to marine realms. R. Bradford will present the results at November meeting.

S. O'Neil reported that holding facilities and the water supply line at Mersey are being upgraded with completion expected by mid 2004. Due to lateness of funding and the requirement to house some fish in temporary tanks aerated with bottled oxygen in the summer 2003, an accident occurred that resulted in the loss of ~ 3000 F1's. A few hundred F1's were saved and the broodstock all survived. Measures were taken to ensure that there would not be a repeat of such accident. It was noted that DFO SARCEP funding is not A-base but rather dependent on Service Level Agreements applied for and awarded annually. It is not anticipated that future awards will take as long to deliver as those in 2003.

P. Bentzen (Dalhousie) is collaborating with DFO to develop 20 new micro-satellite markers (he has 10 old) of whitefish in order to compare the relationship of Atlantic and lake whitefish in terms of genetic variability. So far it appears that there is low genetic variability (i.e. no variability in 15 of the 20 markers) within Atlantic whitefish relative to lake whitefish. The samples used were collected over a 3-year period at Hebb Lake. Bentzen has some samples from the other two lakes but there is a need for additional samples. A follow-up to this will be presented at the November meeting.

NSDAF

The Inland Fisheries Division of the NS Department of Agriculture and Fisheries received up to $32K to assess the potential affect smallmouth bass may have on Atlantic whitefish present in the Petite Riviere watershed. The project has two major components: (1) stewardship initiatives and (2) biological assessment. A project coordinator has been hired (Heidi Bishop) to lead both aspects of the project.

J. LeBlanc noted that there have been no bass found spawning in the three lakes in which Atlantic whitefish have been found. A report on this project will be given at the RT meeting in the spring.

See attachment 21 for more details on this project.

Bridgewater Public Service Commission

The issue of obtaining hydro-labs for use is still on the table but those that were previously thought to be available have been committed elsewhere. The Bridgewater Public Service Commission is, however, independently collecting water data.

There has been some concern about access to Millipsigate Lake as the access road to the dam is private and landowner permission to cross is required.

The letter sent to the co-chair by the Town of Bridgewater regarding stocking of lakes caused a misunderstanding. Introductions were to be in the main stem below the watershed lakes and therefore not a concern.

Socio-Economics

A generic framework is in place for doing Socio-Economic monitoring. Over the fall it will be customized for whitefish and developed into a test case. In the long term there is a need to establish a system of formally monitoring management performance and of linking management and stewardship activities to species recovery initiatives. Such a framework should permit the evaluation of priorities and identification of benefits/costs to stakeholders for various management activities. For this exercise Rudd needs to consult RT members on available data, especially expenditures and any information about different stakeholders that the management measures may affect.

J. LeBlanc volunteered to provide information on the National Recreational Fishing Report. Rudd was unsure how the socio-economic considerations within the potential issuance of incidental harm permits (IHP) will be incorporated into the framework. It will however consider different socio-economic and hopefully ecological costs to stakeholders, whether direct or indirect. It is hoped that the framework for whitefish will be completed in the in the spring. Rudd is to provide updates on data collection at the November meeting and preview of analyses at the spring meetings.

Maritimes Fishery Regulations

At a previous meeting G. Stevens presented a draft RIAS (Regulatory Impact Analysis Statement). The proposal is to amend fishery regulations to prohibit the live transport or possession of live species. This proposal has been presented to different groups and there seems to be general support. One modification to the draft was to have the regulations applied to all species and list exemptions. It was suggested that exotic fish from pet stores are sometimes introduced into lakes. Stevens noted that this is already illegal. It is anticipated that these new regulations will not be implemented before late 2004 but more likely sometime in 2005. A draft of the RIAS is included in attachment 22.

Communications and Public Awareness Subcommittee (CPAS)

There have been several articles regarding whitefish over the last couple of months, including those in the Chronicle Herald and Bridgewater Bulletin. Ads were placed in local newspapers ('Bridgewater Bulletin' in English and the 'Le Courier de la Nouvelle-Ecosse' in French). See attachment 23 for a copy of the English version. 'Country

Canada' and 'Land and Sea' seem interested but these are not yet definite. A fall project will focus on higher visibility, for example, existing field/facility work, posting of material on a web-site etc. Also the CPAS plan to move forward on community education and stewardship initiatives.

Listing/ Prioritization of Projects and Potential Sources of Funding

Please see attachment 24 for details. Note: emphasis of "essential", "may", and "desirable" replacing high, medium, and low priorities used at the meeting.

Essential for recovery – (high priority)
May provide recovery – (medium priority)
Desirable for recovery – (low priority)

Request to stock sea-trout

This issue was first tabled at the April meeting of the RT and prompted a high level of concern which resulted in several action items for discussion on this agenda, specifically, the provision of NSDAF stocking history (1976-2002) and DFO stocking history (1976-1990) (attachment 25).

The provincial records indicate that brook trout of domestic origin have been stocked in Petite lakes up to and including 2002. "Sea" trout have yet to be released. Sea trout available for stocking would be of Antigonish Hatchery origin (20cm range and adipose clipped).

DFO's records indicated that Atlantic salmon principally of LaHave River origin had been stocked in the main stem over the period of records ending in 2000. There are no stocks available and no plans for "recovery" of salmon in the Petite.

It was pointed out by RT members that there was currently a "good" population of speckled trout in many areas of the watershed and possibly sea-run trout, although in the case of the latter, unavailable to a sport fishery by virtue of a closure designed to protect Atlantic salmon. Assessments of the status of the trout species have not been conducted.

A general discussion ensued including the following points:

- past stocking of trout hasn't been questioned
- previous considerations were dealt with in a single species management framework and had not considered or questioned the potential impact of trout stocking (e.g., potential to manifest a disease/compete for food and habitat etc.) on other species, specifically whitefish
- no one had yet addressed the criteria for stocking fish in potentially sensitive and certainly a "unique" system with respect to the fish assemblage
- there is little or no basis to curtail or prevent stocking into a unique system other than the precautionary principle

- From a Resource Management perspective, stocking sea-run speckled trout below Hebb Lake is a low risk activity. Trout, salmon and Atlantic whitefish have always co-existed on the Petite and Tusket systems. Both systems have been regularly stocked with salmon and trout in the past. However, because Resource Management doesn't have a problem with the proposal does not mean that Science and other clients feel the same. As the RT works on a consensus basis, the consensus did not support that view.

In an effort to prevent the immediate introduction (this fall for a spring fishery) of sea trout, it was suggested that the main stem Petite be open to fishing only for trout from January to April. This suggestion was made because of the possibility that there is already a fishable population of sea trout, albeit protected by closure to fishing.

A change of angling season would need to be tabled at both the Recreational Fisheries Advisory Council (RFAC) and the Zone Management Advisory Committee (ZMAC) for salmon meetings. Existing closures of Salmon fishing are from April 1-14th. If the season opened early, then NSDAF indicated that they would conduct a creel survey to assess catch rates. It was noted that the opening of the season early could affect the salmon population. A group will be assigned to keep this on the table from biological and conservation perspectives. This has to be done within the next 6 weeks. J. LeBlanc, G. Stevens, L. Marshall, with I. Marshall leading, will report back at the next meeting.

Whitefish exhibits

S. O'Neil reported that the reason that the planned exhibit for the Huntsman Marine Center didn't work was because regional fish health/quarantine issues had been over looked, i.e., Mersey is not a certified disease-free facility. If the display is to be 'flow-through', the NB regulations require that there be disease testing (sacrifice) of the fish to be transferred. However if the display is to be "static", the issues can be more easily resolved. It is anticipated that the hurdles will be cleared in order to affect a transfer in 2004.

Repository for RT Minutes

Minutes that are produced from our meetings will be put into a "proceedings document" that will be posted on the CSAS web-site.

Sarty Pond

A newspaper article indicating that Ducks Unlimited is to abandon their water control structure on Sarty Pond prompted a question regarding the potential impact on whitefish. Discussion suggested that this was not likely to be a habitat issue for whitefish but might be an issue with respect to water quality. It was subsequently suggested that someone, including an individual from Habitat Management, contact the biologist from Ducks Unlimited to evaluate the potential impact on whitefish. The Co-chair is to file a report of findings at the November meeting.

Next Meeting - November 27, 2003 in Bridgewater

Synopsis of the November 27, 2003 Meeting

Members of the Atlantic Whitefish Recovery Team met on November 27, 2003 at the Wandlyn Inn in Bridgewater Nova Scotia. Please see Appendix 9 for a list of participants. The meeting opened with introductions and a review of the agenda. Please see Appendix 10 for a copy of the agenda.

Agenda Items

Review of Minutes & Action Items

A summary of research activity results will be given by R. Bradford at this meeting.

A summary of fish assemblages at Anderson Lake from baseline gill net and water quality surveys will be presented by R. Bradford at this meeting.

Presentation of the results of the otolith isotope analysis of the fish given by D. Bell is deferred to the April 2004 meeting.

Some information regarding whitefish genetics will be discussed today but most discussion is deferred until April 2004.

Draft wording for a road sign indicating the Petite being "Home of the Atlantic Whitefish" is still under discussion. A mock up of the sign was provided and wording has been changed. An update will be provided at the next meeting (April 2004).

G. Stevens modified a RIAS (Regulatory Impact Analysis Statement) so that regulations for transport and possession of live fish to apply to all species. Exemptions would then be listed.

CPAS (Communications and Public Awareness Subcommittee) appointed C. Myers as their representative on the team reviewing pre-proposals for HSP projects.

K. Querbach discussed the availability of funding for HSP and projects of interest to the RT with the CPAS.

The DFO co-chair discussed defining the common issues of the whitefish RT and the Coastal Plains Flora RT with M. Elderkin and S. Boates. These discussions are on going.

An update will be provided at today's meeting on the discussions between G. Stevens and the province regarding sea trout introductions. A group to promote this issue from Biological and Conservation perspectives was assembled. Members are J. LeBlanc, G. Stevens, and L. Marshall, with I. Marshall leading. A report will be presented at today's meeting.
A brief update regarding the removal of the fish ladder on Sarty Pond and its potential effect on whitefish habitat will be provided today. This issue is on going.

Stocking of Whitefish

PH and salinity trials are planned for January in anticipation of the possibility of the introduction of an anadromous run. The issue of where to put the fish has been under discussion for the past couple of years. A framework that would help to formulate an objective decision regarding where to stock the fish was discussed.

R. Bradford presented possible criteria for re-stocking Atlantic whitefish based on what has been done for the Inner Bay of Fundy (iBoF) salmon. An explanation was given as to what was done for salmon, and it was suggested that we apply the same logic to whitefish. Branford's criteria include societal, ecological, and habitat issues.

Several points were raised:

- It was asked whether the fish should be stocked in a heavily sport-fished area.
- It would seem that the focus should be on putting the fish where outreach initiatives are in place.
- Long-term viability: Where can we put the fish with a human footprint?
- Ecological: What fish live there now? Is there a buffer for an introduced species? Can you maintain potential threats?
- Habitat: Water quality. Is the pH acceptable? Is the forage base adequate? Does the team recommend this type of study be done?

The suggested process for recommending a site would be to first go through the criteria and have it recommended by the RT and then apply to the IT&T Committee.

What would intentions be? Give the RT a list of sites? Develop the criteria first and then bring to the RT before proceeding with the actual 'matrix'. This is largely aimed at landlocked populations. On the anadromous side of things this type of matrix wouldn't have a great deal of input into this process.

Questions were raised as to what the strategic plan would be, what the time frame would be, and how many sites would be required. It was pointed out that the project is long term and would develop over the next 10 years. It will involve genetics, although studies to date indicate that the genetic diversity is low.

Final questions included:

Why are certain sites chosen over others? How should this be monitored? How do we deal with the anadromous population?

Any suggestions as to what should be included in the criteria for whitefish stocking should be sent to Bradford. Our ultimate goal is to maintain the species in a natural habitat.

The SARA Compliant working group includes M. Elderkin, T. Wheaton, A. McPherson, and I. Marshall. A copy of what is required in the compliant strategy is included as attachment 23. A copy of the Blandings Turtle SARA Compliant Recovery Strategy, can be found at http://www.speciesatrisk.ca/blandings/Blandings_Turtle_Recovery_Plan_Jan2003.pdf.

HSP Review

The proposal review committee reviewed the proposal for Education and Awareness and recommended that a full proposal be developed. Please see attachment 27 for a copy of the pre-proposal.

B. Cook asked the group for recommendations for a person who could facilitate the workshop. M. Elderkin suggested Steve Hawboldt, and will provide Cook with his contact information.

Communication and Public Awareness Sub-Committee Report

Road Sign

The wording of the sign should be changed to include words like 'globally' endangered or 'last home' of the Atlantic whitefish. It was suggested that the phrase 'water supply' be replaced by a logo. M. Fox is to coordinate the location of the sign. He will explore what criteria are required for the Department of Transportation (DOT) to install a sign and whether they will do it if DFO does the graphics. It was suggested that the DFO contribution be in-kind, as this would enable the team to put up an English-language sign. If not paid by DFO it doesn't have to be bilingual. There is support for including a graphic of the fish. It was suggested that a photograph rather than a drawing of the fish be used. R. Bradford, M. Elderkin and C. Myers will decide on an image (Bradford and Elderkin will send images to Myers). The final wording for the sign is: 'Last home of the globally endangered Atlantic whitefish'. There is support for placing the sign near the water along the 103. The sign would be 6-10 feet wide and 12-20 feet long. This could be a HSP project with the Town, or the Bluenose Coastal Action Foundation (BCAF) could incorporate it into their HSP project. It was noted that if this were to be done with HSP funds it would still need to be translated.

The wording of the sign must also include 'Petite Riviere' (before other wording). BCAF will include this in their HSP proposal and Mike Fox will talk to DOT.

Update on Communications Activities

C. Myers will work with BCAF on communication initiatives. The group is working on getting visuals and on the website. The group would like a project list so that they might be able to get more visibility. They would also like more photos of fish. Next year there will be more dedicated projects they would like to work on. There will be some open houses in Bridgewater that they could likely piggyback on. M. Fox will inform BCAF of the scheduling of these so that they can participate. The next open house will be for people who have direct impacts on the watershed. R. Bradford and I. Marshall are considering having some sort of session in the Tusket to get people

interested. Not sure how this will happen but will likely piggyback on something else. A question was asked regarding the idea of exhibiting whitefish. Did this happen? This was discussed at the last meeting but basically the project for Shubenacadie display has not gone through and may not happen. It was noted that Jon Stone (EC) is working on this and may be applying for Interdepartmental Recovery Fund (IRF) funding.

Nova Scotia Department of Natural Resources (NSDNR) is working on a website that will have updated information on Species at Risk. They are also working on other projects for Species at Risk. It was noted that all projects are aimed at getting information out to the municipalities and others at an early stage.

NSDNR & Municipal Stewardship

Referring to discussions on combining some aspects of the Coastal Plains Flora project and the Atlantic whitefish project, Elderkin noted that there are biological and political differences between the two. Stakeholder groups are quite different. They are not seen as a common platform at this time because there are different levels of threats on the Petite and Tusket River watersheds. BCAF is doing a project on the Petite and there are a wide range of stewards. The Municipal project incorporates all species at risk. Database and maps raise awareness of stewards and individuals in the areas. Critical habitat is being incorporated into the municipality project. This process will allow for flagging species at risk when requests are received for planning.

Sarty's Pond

The proposal to decommission the fish ladder on Sarty's Pond is on hold while Ducks Unlimited is waiting to see if there are funds to rebuild it. Some repairs were done last fall and should hold until spring when a decision will be made. This item raises water quality issues as this may be marginal habitat for whitefish. It was suggested that we look at this more in terms of a habitat conservation issue rather than just as a fish passage issue.

The question was asked as to what happens if DFO doesn't give the ok to decommission? Is Ducks Unlimited required to maintain it? It was noted that we (DFO) would need a strong case to turn them down. If we turned them down then it would decommission naturally anyway. We should work proactively with them to ensure that it is maintained. Elderkin will look into some funding that may help out (Eastern Habitat Joint Venture Fund?) There have been discussions between DFO Habitat and Ducks Unlimited to start a pilot project of developing a 'rock ramp'. This is something that is done in Europe.

Sea Run Speckled Trout

The decision not to stock trout was reached via conference call. As a compromise, the angling season was adjusted. Angling would be open on the lower area of the Petite to single, un-baited lures with a bag limit of two trout, which would allow access

to the sea run trout. The Province is willing to conduct a creel survey to get baseline information. It was suggested that the bag limit be reduced for the entire season on the main stem of the river.

Discussion began on the fact that D. Bell is no longer present at our team meetings. It was noted that his (D. Bell) absence is definitely a problem when it comes to DFO and Province consultations on the fishing season. J. LeBlanc will contact Mr. Bell to tell him the decision. J. Gilhen will also give him a call.

Science Update

Chain Pickerel Introductions

R. Bradford gave a presentation on chain pickerel introductions. Pickerel are now in 30 watersheds although introductions of non native species have been illegal since 1945. This will affect our decision as to where to re-introduce whitefish. Studies show that fish assemblages tend to collapse when fish with spines are present but collapses are rare when soft rayed fishes are introduced.

All presence and absence data were presented. It was noted that Ontario pickerel are in decline and it would be interesting to find out what this is attributed to.

Petite Lakes Monitoring and Water Quality Work Done this Fall

A trap-net was set for two weeks, catching 17 whitefish in fairly good shape. This shows that it can be done and that the fish are fairly well represented in the fish assemblage. The project would be redesigned for next year. As well, tagging is anticipated to be done next year.

Minamkeap Trammel Net

No whitefish were caught in the 3-day survey. Bass, bullhead, perch and sucker were present.

Bentzen's Genetics Work

The study shows that there is very little genetic variability among Atlantic whitefish samples obtained from one lake. The reason for this is not known but fish from other lakes are being collected to determine if the lack of variability is a general phenomenon or just a local effect. It was noted that Lake Whitefish show a lot of genetic variability and it may be that low variability among Atlantic whitefish may have been caused by a 'bottlenecking event'.

The results of the expanded genetic survey will play an important role in how we are going to re-stock these fish. We need to solve the genetic structuring among the lakes.

It was suggested that genetics may also be important for the identification of Critical Habitat. The National Recovery Working Group has developed guidelines on Critical Habitat identification, although they are not available for distribution. A working group

to discuss this as well as the re-writing of the Recovery Strategy will be developed, with I. Marshall as a lead.

Other Items

Fate of Dead Fish

It was noted that these fish have scientific value and can be used for various studies. Once studies are complete, remainder of fish will be sent to the museum for their collection. J. Gilhen noted that anything that is sent over needs to be labeled properly. The question of whether genetic material from the fish will be archived was raised. Tissue samples will be preserved in alcohol and kept at BIO. Cryopreservation is being explored.

Recovery Team Terms of Reference (TOR)

The TOR for the RT will be circulated for comment before the next meeting at which time approval will be sought.

Membership

Jonathan Kierstead of Bowater Mersey has resigned from the RT.

Next Meeting

Mid-April 2004 pending decisions on funding for projects

LAKE UTOPIA DWARF SMELT RECOVERY TEAM

INTRODUCTION

Lake Utopia, in south-western New Brunswick is the home of two morphologically and genetically distinct forms of smelt, 'dwarf smelt' and 'normal smelt' (genus Osmerus). The dwarf form was last examined by The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2000 and designated as threatened. The limited geographical distribution of the Lake Utopia Dwarf Smelt population makes it vulnerable to various environmental threats and so it is currently protected under the federal Species at Risk Act (SARA). The goal of the Recovery Team meetings is to examine those factors which pose a threat to the preservation of this population and to develop strategies to help ensure its survival.

Members of the Lake Utopia Dwarf Smelt Recovery Team met on March 21 and October 1, 2003 in Fredericton, New Brunswick. The goal of these meetings was to review progress that has been made in the evaluation of the Lake Utopia Dwarf Smelt (LUDS) population and its habitat, and to discuss a recovery strategy for the restoration and conservation of this population. Following is a formatted and stylized synopsis of these meetings.

Synopsis of March 21, 2003 Meeting

Members of the Lake Utopia Dwarf Smelt Recovery Team met on March 21, 2003 at the Sheraton Hotel in Fredericton, New Brunswick. Please see Appendix 15 for a list of participants. The meeting opened with introductions and a review of the minutes from the last meeting. Please see Appendix 16 for a copy of the agenda.

Agenda Items

Election/Appointment of Chair for the RT

The Chair discussed the roles of recovery team chairs and the group was asked for any volunteers/nominations to fill the non-DFO chair. There were no volunteers or nominations. A. McPherson asked for volunteers to fulfill the DFO-chair position and nominated M. Rudd who declined, as he felt that someone with more background on smelt would be preferable. As there were no other volunteers or nominations, McPherson will remain as Chair until the next meeting.

NB Field Season Results

S. Currie presented the NB field season results. The field report is still being completed and it will be distributed when it is finished.

The presentation prompted several questions regarding the Lake Utopia site:

Q. Is there any evidence of smelt in any of the brooks studied?
A. No, there appear to be only suckers.

Q. Is there a dam at Mill Lake?
A. Yes, at the outflow to Mill Lake Stream. It's an old logging dam.

Q. Does the dam affect flow into Mill stream?
A. No, the water is spilling over the dam. The dam is falling apart.

Q. Is there any road and cutting activity across the top of the lake?
A. The site has not been visited and therefore the level and type of activity occurring there is not known. However, the road is a passage to a popular beach and this has been a problem. Alternate routes have been suggested. Regionally, there is a plan in place to identify areas that have ecological significance and action has been triggered on those three streams where spawning is known to occur. Some of the land in that area is now crown land.

Q. Is there any evidence for spawning in the lake (shore spawning)?

A. Currently, there is not evidence of it but it cannot be ruled out at this point. We ruled out 14 streams but they might be using some of the shorelines around the lake.

Discussion on Recovery Strategy

Introductory Remarks

Progress to date and suggestions on how the team might move forward were presented. The Chair discussed future milestones as well as the expectations of the recovery team. It was clarified that the strategy is being prepared by DFO in consultation with the recovery team. DFO needs and wants the input of the recovery team, as they are the experts and interested parties. It was noted that the draft strategy was sent out to members in January and that and the DFO Maritime Species at Risk Office only received comments from the NB Government.

The Chair suggested that we separate the recovery strategy from the action plan and she explained the difference between the two. The two documents can be developed on parallel tracks but they should be separate documents. Further, the strategy is a set document while the action plan is evolving. The recovery strategy will be one document for the five years. DFO has a legal timeline associated with the generation of the recovery strategy; therefore, that should be the first priority at present. The team was asked if there were any objections to separating the documents. There were none.

Comments

The distinction between the action plan and strategy is still not clear but we can clarify this as the day proceeds. We can hold off on a consensus until then.

We must keep in mind that the LUDS were listed because they only exist in Lake Utopia and thus, there are less than five populations on the planet. Further, COSEWIC suggested that there were 300-400 individuals, which is not the case (there are more). Therefore, the recovery strategy is not a strategy for recovery; it is a strategy for maintenance. We should be working toward downlisting the LUDS.

D. Rowland had some concerns about the length of the strategy and the appendices. The group decided that length itself was not important as long as it is written for the correct audience and entails all of the required components. It was agreed that it should be shortened and tightened up. Discussions on which appendices should be included commenced, and it was suggested that if any of the appendices could be paraphrased in the document, that would be a good start. This has already been accomplished in parts of the document. It was agreed that the regulatory framework was very useful and should remain as an appendix. It was suggested that links be made to other websites for documents that might not be included in the appendices.

Recovery Strategy Structure

McPherson presented a sample structure for the recovery strategy document, which included all of the SARA compliant information. The NB government also presented a structure and it was distributed to the team. Their structure was a simplified version of the original taking into account that the species seems to be doing quite well. The management concerns of the province were also embedded. The team decided that it would be best to put McPherson's structure up on the screen, as it is SARA compliant and address each section at a time. Every section was discussed so that all recovery team members had an opportunity to comment. In addition, specific incomplete tasks were assigned to members. The structure is reproduced below with discussion and comments embedded.

Status of species

- **COSEWIC designation** – this component is completed
- **Reasons for designation** – this component is completed
- **Historic/current distribution and abundance information** – this section should include a statement on the current status of LUDS (i.e. that they are doing fine).

Statement of recovery feasibility – this is an important section for this species given its unique circumstances. Recovery is feasible but it must be stressed that in this particular case, maintenance of the already self-sustaining population is the goal, not recovery. The species does not need recovering; it needs to be maintained. M.Toner/S. Currie will write a section on the statement of recovery feasibility.

Recovery objectives

- *Long-term objectives (population and distribution objectives that if met would be considered "recovery" by the team)* – there was a lot discussion on this. Maintenance of the population is the long-term objective so quoting the current population quantities would suffice. The number of mature adults is the most important issue and it is difficult, as the numbers vary extensively. There was more discussion on whether there is sufficient data to estimate an appropriate abundance and it was suggested that we come up with a number that we do not want to go below (e.g. a percentage drop from the current numbers). It was also suggested that using other populations' demographic information to estimate an appropriate desired population size might be the way to proceed. What is typical across proximate populations could be quantified. The majority agreed that this was the best approach. R. Bradford will assess the information on other populations and get back to the team with the results.
- *Short-term objectives (5 year target)* – the short-term target is to conserve the numbers that we currently have.

Species description that is consistent with COSEWIC report that includes species

- *Ecology* - this information is already in the document but needs tightening up. The information should be short and concise.
- *Biology* – same as for ecology.
- *Needs* – same as for ecology/biology except that some of the needs were discussed under the next section of identifying knowledge gaps.
- *Identification of knowledge gaps* – the group came up with a list of gaps:
    a) Basic biological information is required including a consensus on the morphs
    b) More information on how smelt use the lake is required
    c) Lake life history information is required
    d) Lake distribution information (within b above) is required

Habitat Requirements

- *Identification of critical habitat to the extent possible based on the information available* – this is going to be a very difficult issue, as it has a number of implications. There was a great deal of discussion on this. It was suggested that at the very least, the three tributaries (i.e. spawning habitat) should be declared as critical habitat. There was a comment that even though the tributaries are very important, they may not actually be critical. Do we have enough information to say that they are? An opposing comment was that we are not confident that if these streams were destroyed, the smelt would spawn elsewhere so we should be defining them as critical. The group struggled with the idea of critical and whether it is a biological or legal issue or both. DFO members outlined that critical habitat is a biological issue and the expert biologists should address the critical habitat issue. Members from the province saw critical habitat as both a biological and a legal issue. It was suggested that from a DFO perspective, it is up to our minister to address the pros and cons of declaring the habitat critical and our job as scientists and recovery team members to define critical habitat based on the biological needs of the species. However, the implications of designating critical habitat are important and some Recovery Team members contended that such implications should be taken into consideration. More information would facilitate this process. A copy of a document with information regarding the lake will be obtained from D. Fox.

  It was concluded that volunteers would work on the critical habitat issue, given that information is currently available, and provide the results to the team. Moreover, the critical habitat issue will be discussed further with DFO/NB DNRE.

  K. Collet, A. Curry, S. Astephan, A. McPherson, K. Querbach, and M. Toner will look into the issue of critical habitat and pursue discussions between DFO/NB DNRE.

McPherson and Querbach will also provide more information on critical habitat to the above group and the team.

- *Examples of activities likely to lead to habitat destruction* – this will be discussed under threats.
- *Schedule of habitat studies when information is inadequate* – this was not addressed, as it will depend on the outcome of the threats section.

Assessment of threats and other barriers to recovery

Recommendations to mitigate these threats including measures already in place.

Threats were addressed using a table of potential threats provided by the NB DNRE group (with some additions from the team) using rankings of low, medium or high. Please see attachment 28 for the table. The potential affect and mitigation response was then outlined. Finally, the need for further information was assessed. Prior to going through the table, the section regarding threats in the COSEWIC report was reviewed as a reminder. From the COSEWIC report the threats were as follows:

1) predation pressure
2) size and number of spawning streams
3) spawning habitat susceptibility
4) recreational fishery.

It was concluded that these threats could be mitigated with small changes.

General description of the research and management activities needed to meet short and long term recovery objectives

The team went through a general description of research initiatives recovery and management but did not complete this section due to time constraints. The following was suggested:

1) Short-term: Improve information on population status and distribution and use this data to develop a management plan
2) We need to find out where these are found that in the lake
3) What is the scope of the threat to these species?
4) Long-term: Persistence and all that comes with it

Comments

It was suggested that agreement was needed on a monitoring technique, as this could be the last field season to collect data. A low effort system that provides good results would be the best option considering the current financial and time constraints. It was suggested that using eggs to calculate the estimates of population abundance would be the best method. An index of egg to spawner abundance could be created and it is

much simpler to map eggs than to map the adults. It was agreed that people would be required every night for 6 weeks and that it should be set up by the third week of April.

S. Currie and others are to agree on how many evenings, how many people and the total cost, and come back with a number for A. McPherson.

Bradford is to help Currie and others on the sampling design for this season given the suggested use of eggs.

Statement of allowable activities/level of permissible harm

The team was split on whether there should be an allowable take or not. This issue is similar to that for critical habitat with many biological, social, legal and political concerns. There was a discussion on whether dipping should be prohibited in the three tributaries and the team was split on this issue. The social cost of monitoring and enforcement should be compared to the cost of the fishery.

McPherson will check on the allowable take issue and get back to the team.

Statement of when one or more action plans will be completed

This section was not addressed due to time constraints.

Other Items

The material from the meeting will be sent out to the members. A time-line of 6 weeks was decided upon for people to send in their comments on the sections they were volunteered for. Therefore, an end-of-June meeting should be possible.

Synopsis of October 1, 2003 Meeting

Members of the Lake Utopia Dwarf Smelt Recovery Team met on October 1, 2003, at the Lord Beaverbrook Hotel in Fredericton, New Brunswick. Please see Appendix 17 for a list of participants. The meeting opened with introductions and a review of the minutes of the previous meeting. Please see Appendix 18 for a copy of the agenda for this meeting.

Agenda Items

Minutes from Previous Meeting

The minutes from the previous meeting were reviewed. Action items were discussed. The following items arose from the minutes of March 21st 2003 Recovery Team meeting:

- K. Querbach is to provide water quality report from Eastern Charlotte Waterways for distribution to the team
- R. Bradford is to assess abundance information on other smelt populations to aid in formulating the short term and long term population objectives.
- DFO and DNR will discuss the process for identifying critical habitat

All other action items had been addressed.

Update of the 2003 Field Season

S. Currie updated the team on the population assessment undertaken in the spring-summer of 2003. The original plan was to calibrate the thickness of egg masses to population abundance. This would allow the use of egg mass monitoring (to infer population abundance) in the future. However, egg mass measurements were impossible; it would likely be very difficult to time sampling such that eggs could be reliably used to estimate spawner abundance. Many dwarf smelt were observed – between 5000-100000 in any one night. This was not a complete census as not all of the available habitat was surveyed due to accessibility issues. Fecundity of dwarf smelt was also examined. Smelt samples were collected for Jennifer Shaw (UNB) and P. Bentzen (Dalhousie).

J. Shaw (Master's student of A. Curry), reported on her thesis research. She is comparing the growth rates of the smelt morphotypes in Lake Utopia using otoliths. Regarding her sampling design, only the surface of the lake was sampled and the smelt seemed to prefer shallower (5-15m) areas of the lake. Almost the entire lake was surveyed and temperature was recorded when samples were collected. Stomach contents of the larval fish have not been looked at but this could be pursued in the future.

Overview of the Habitat Stewardship Program (HSP)

Because K. Querbach was not able to attend the meeting, HSP was only briefly discussed. However, the team did tentatively agree to a process for proposal reviews. A small group will assess proposals: K. Smedbol, S. Curry, M. Rudd, R. Ferguson, and K. Querbach offered their assistance to the Chair. Criteria for evaluation are to include the priority of the project, the probability of success, its impact on recovery, and the ability of the proponent to carry out the work. The team agreed that if a member of the review group applies for HSP funding, they will not participate in the review of their own proposal.

Team members will notify the chair if they would like to participate in the review of HSP proposals in the event that any are submitted.

Querbach will provide her HSP presentation for distribution to the team.

Update from Eastern Charlotte Waterways(ECW)

S. Farquarson reported that ECW has targeted the southern part of the lake and gone door to door educating lake users to which they have received a very positive response. As well as developing a community lake associations program, they are working with the province of NB to monitor water quality on Lake Utopia.

Identification of Recovery Priorities

Given that genetic, larval, and population analyses are underway, the team deliberated the actions necessary to recover the Lake Utopia Dwarf Smelt. The following is the outcome of those deliberations. Recovery team members are invited to make additional comments.

- Essential for Recovery
  - -Lake eutrophication; collect baseline water quality data
  - -Life History and Habitat; survey to assess where smelt are in the lake
- May Promote Recovery
  - -Communications; information on regulations and impacts targeted to landowners and users
- Desirable
  - -Hydrological Data; information needed due to reversing channel

External review of recovery strategy draft and consultations with the public

McPherson solicited suggestions for who might be qualified and willing to review the strategy. Someone from OMNR could be contacted, possibly John Casselman. Public consultations with the public were briefly discussed. The need for a public meeting in St. George (with someone present who could respond in French) was advanced.

Time and place of next meeting

If all Action Items can be addressed in the next 2 months, the next recovery team meeting will take place on December 4, 2003 in Moncton, NB.

Recovery Strategy

The remaining meeting time was spent discussing the recovery strategy draft. The following action items arose from that discussion. A revised version, based on the comments of the meeting, will be distributed shortly.

- **Allowable activities**: There was general agreement that the section on the fishery will remain in the strategy and will form the basis for the allowable activities section. DNR leads on recreational fisheries but conservation falls to the federal government so enforcement would need to be addressed in the SARA bilateral discussions. Toner will ensure that this issue is addressed in bilateral discussions.
- **Appendices**: The consensus opinion was that they are useful but need to be condensed. Querbach will condense appendices and send them to the team for review. Querbach is to contact Toner for information on ecoregions.
- **Regulatory framework appendix**: There was general agreement that the interpretation of laws is problematic. Perhaps just a list of regulations is required. Regulations that are discussed earlier in the strategy need to be referred to here. McPherson will review federal regulations and Collet will review provincial regulations.
- **Glossary**: There was general agreement that more definitions are needed. Recovery team members will review the document and suggest words to be included in the glossary (accompanied by definitions where possible).
- **Water levels in the lake:** The question arose as to whether there are minimum and maximum operating levels for the lake (at the dam) to explicitly protect the dwarf smelt spawning habitat. S. Curry will investigate and report back.
- **Future land use and the potential impact on the dwarf smelt**: Farquarson is to provide wording to capture the need for monitoring and management of land use adjacent to Lake Utopia.
- **Statement of historical abundance levels of dwarf smelt**: Does this information exist? Perhaps we could draw inferences from the first records of dip-netting – this would indicate a viable fishery. S. Curry and P. Cronin will investigate the first record of dip-netting and report back.
- **Number of spawners on any one night vs population abundance estimates**. S. Currie and A. Curry to develop this section in the text and clarify the caption associated with Table 1 in the recovery strategy.
- **Distribution of smelt in the lake**. J. Shaw will use her information on effort and sampling locations to develop the section on ecology of smelt in the lake.

- **Threats table**: McPherson to revise and reorganize table based on the comments of the team. Smedbol to develop definitions for what we mean by high, medium and low risk for inclusion in the table caption.

ATLANTIC LEATHERBACK TURTLE RECOVERY TEAM

INTRODUCTION

The Atlantic Leatherback Turtle Recovery Team has been in place since early 2002 with participation from a number of interested parties. The Team itself is comprised of representatives from various sectors including the fishing industry, the seafood industry, conservation groups, academia, and government. Representatives from Fisheries and Oceans Canada and the World Wildlife Fund co-chair the Recovery Team.

Members of the Atlantic Leatherback Turtle Recovery Team met on October 16, 2003 March 25, 2004 in Dartmouth, Nova Scotia. The goal of these meetings was to review progress that has been made in the research and evaluation of the Leatherback Turtle population, and to develop a recovery strategy that fosters the recovery of Leatherback turtles. Following is a formatted and stylized synopsis of these meetings.

Synopsis of October 16, 2003 Meeting

Members of the Atlantic Leatherback Turtle Recovery Team met on Oct. 16, 2003, at the Lord Nelson Hotel in Halifax. Please see Appendix 19 for a list of participants. Please see Appendix 20 for a copy of the agenda for this meeting.

Agenda Items

The objectives for the meeting were outlined as the following:

- Review draft strategy
- Priority areas for recovery
- Set timeline/next steps

The team went through the agenda in order to add items. One item added was a discussion of the Action Plan document. This was moved under next steps.

Background

R. Jones (co-chair) presented on the history of the smaller recovery working group (RWG) using timelines from March 2003 until present.

March 2003: It appeared at this time, that there was a lack of progress in the formation of the recovery strategy as well as the need to address SARA requirements. As a result, a small working group approach was suggested.

April 2003: A letter was sent from co-chairs to recovery team regarding this approach including a timeline for the next draft (June 2003).

April 2003: The recovery working group (RWG) held a conference call and a face to face meeting in order to assign tasks, which would build on previous work. The 'background' section was refined and the 'goals/objectives' section was organized. The goals and objectives themselves were not changed much from what the team had decided upon previously. The RWG also addressed the SARA requirements of the strategy. Those outstanding sections were flagged (e.g. knowledge gaps).

May/June 2003: The issue of Critical Habitat was addressed. An expert opinion was solicited and a review of this expert opinion will take place in November 2003.

July 2003: Draft produced, circulated and comments requested.

Sept 2003: Comments received, draft revised to accommodate the editorials and major issues flagged. Comments were separated into two categories: 'editorial' and 'discussion topics'.

October 2003: Recovery team meeting held to go through the draft, in particular, the 'discussion' topics.

There were some comments on the process to date. One concern was the fact that industry was not represented on the RWG. This was disappointing, as there had been a lot of participation up until that time. The point was taken. It was explained that the process of forming the working group was meant to be unbiased and transparent. The composition of the group was meant to be neutral. It was formed for the sole purpose of getting things back on track with the full intention of involving the rest of the team in the review of the drafts. The recovery strategy will be reviewed at least once more before it is submitted so there will be ample opportunity for the team to have input. Essentially, we have Draft Version 1 in our hands. The RWG welcomes other members to become involved in the group's activities.

A second comment arose regarding the difference between the recovery strategy and the action plan. The recovery strategy is a static document that outlines the main goal and the general objectives. The action plan picks up where the recovery strategy leaves off. It is much more specific outlining specific projects, who might do them and what it might cost. It was stressed that this is a new process and we are still trying to understand it fully.

A third comment was that there has been a general lack of communication given all of the changes and it was suggested that even if there is not much going on, it is still important to be updated regularly. This was recognized as a valid point and is a lesson for the future.

Draft Recovery Strategy - General Comments with Reference to the Pacific Plan

The first general comment dealt with first nations and the importance of adding any significant information as per the Pacific Plan. It was concluded that there isn't much; however, there is a carving and it can be added with a reference. ACTION ITEM: D. McAlpine to provide a reference for the carving.

The issue of having a First Nations representative on the team was brought up. They were asked initially but it might be appropriate to ask again. There were two individuals from Labrador who presented at the HSP workshop in October that were keen on getting involved in species at risk issues. ACTION ITEM: C. Hood will contact these individuals and ask about potential participation.

Another general comment was the need for a section on activities going on outside the Canadian jurisdiction. It was concluded that it would be very difficult to fully exhaust this material and it would require a lot of effort. A general section can be added to the recovery strategy with more specifics added to the action plan under the objective of international cooperation.

The final general comment was that of indicators of progress. They are listed in the Pacific Plan and it was suggested that we also have them here. After 5 years, there is an obligation by the minister to report on progress and this is most likely why it is in the Pacific Plan. It was concluded that we need a general sense of how we are doing.

Draft Recovery Strategy with Reference to More General Comments

There was a general comment that the emphasis on Canadian jurisdiction should be made stronger. However, it is important to keep in mind that a broader global context also needs to be there. This can be accomplished easily with specific headings for 'Canadian' and 'Global' throughout the document.

It was suggested that information on the recovery team steps over the past two years be outlined in the strategy. It was concluded that the public registry might be the place for this.

The last general comment was that the style should include flow diagrams and more pictures. ACTION ITEM: Follow up with M. James on photos to be inserted.

Draft Strategy with Reference to Specific Comments

The specific comments were addressed one at a time, as outlined in the comments section of the draft strategy Word document. These changes were made in the document as we went along. The following will outline discussion topics that ensued during the process.

Recovery Goal
The recovery goal was revisited and edited to reflect the word 'stable' is problematic.

Pacific/Atlantic Recovery Strategies
Necessary to figure out the relationship between these documents and where it is appropriate to be consistent and when it is not. A few sentences should be added to this effect to acknowledge the differences (e.g. threats) and the similarities. ACTION ITEM: Someone to flesh out the issue of the Pacific Plan vs the Atlantic Plan.

SARA terminology
It is very important to be explicit about SARA terminology in the recovery strategy. Important terms should be added to the glossary as well as explained within when necessary.

Section on Current Status
This section is directly quoted from the COSEWIC designation. It was felt that there were sentences under the 'reason for designation' that were misrepresented. It was concluded that for now, a footnote would be added to state that this is directly quoted by COSEWIC and not necessarily the feeling of the recover team given current

information. In the meantime, getting permission to change words in the quote under the 'reason for designation' will be explored.

Type of Gear and Catchability

It was suggested that more discussion is warranted in the document regarding the catchability with different gears. The O'Boyle report could be very useful here. James has also done a synopsis of this and it can also be included. ACTION ITEM: M. James to provide his synopsis document to the team. ACTION ITEM: Ryder to look into correcting the section where Shoop and Kenney is discussed.

Threats – Order

It was suggested that threats should be categorized by Canadian threats vs International threats. It was pointed out that threats in the nesting environment should be put first as they, relatively speaking, have greater impact. Others did not agree that there is sufficient information to conclude this. It is too difficult to rank the threats, except for the poaching of eggs versus the poaching of meat on beaches. ACTION ITEM: Doherty to find references on poaching for the Atlantic leatherback turtle so that it can be outlined that poaching eggs is a much greater issue than poaching meat.

Threats Section - Structure

It was concluded that this section needs reworking in general. There is a need to add more information regarding the reports produced from the fishers through the Habitat Stewardship Program as well as the work by O'Boyle. It was outlined that numbers are needed instead of qualifiers. Also, it is necessary to distinguish between hooking and entanglement as well as what gear catches which turtles. It is important to think about this issue in a broader sense, not just in terms of the pelagic longline. We need to address all of the fisheries. ACTION ITEM: Querbach, Doherty, Atkinson and Murphy will flesh this section out so that it is more complete.

Threats Section – Lightsticks

Discussion took place regarding lightsticks and that all of the observer data from the longline fishery in Canada points to them having no effect. They are known to have an effect in the Pacific but not in the Atlantic. It was agreed that it would be removed.

Recovery Feasibility Section

Discussion ensued regarding whether we should be taking the precautionary approach and assuming the recovery is feasible, as outlined in the strategy. Some felt that it was justifiable to indicate that since we cannot determine feasibility at this time, it should NOT be assumed to be feasible. This is especially because they felt that we are dealing with mitigation in Canadian waters, not recovery of the species as a whole. The final consensus was that taking the precautionary approach was the most appropriate, especially given the guidelines under SARA. It was also outlined that regardless of whether recovery is feasible or not, the prohibitions apply because the species is listed under SARA. It was also concluded that it would be stated in the recovery strategy and outlined more clearly in the action plan that determining recovery feasibility will be a high priority.

Incidental Harm Permitting and Allowable Take

There was concern raised regarding incidental harm permits (IHPs). It was outlined that the IHPs just bridge the gap between the times where there is no strategy and when the strategy is finalized. It is possible to put an 'allowable take' within the recovery strategy. A concern was raised that the fishing industry would have to have 100% observer coverage in order to monitor entanglements to determine whether they are exceeding the allowable take so it will still be extremely expensive and thus, the fishing industry will be impacted. Either way, the fishing industry will be impacted.

It was also outlined that McMillan is preparing a report for peer review that will address the issue of allowable take. This peer review will be held on Oct 30th, 2003. It is hoped that after that time, a section will be included in the strategy for review by the recovery team.

Canadian versus Global

This issue came up numerous times and it was concluded that we are focusing on what we can do in Canadian waters; however, one of the main objectives is international cooperation. This cooperation is essential for recovery of the species. Focusing on what is possible in Canadian waters will be reflected throughout the Draft Version 2.

Actions Completed or Underway

There was some discussion regarding the paragraph on the longline fishery. A main component that needs to be clarified is the history of the use of hooks and the relation to the release of turtles. Especially since the circle hook was used because it was better for catching the target species and avoiding bycatch in general, not because it was better for the turtles, although, it was a beneficial coincidence. It was also made clear that citations are required. ACTION ITEM: Murphy and Atkinson will work on editing these paragraphs and will provide them to the RWG.

Next Steps

Allowable Take Peer Review – October 30th, 2003

Critical Habitat Section Peer Review – Late November, 2003

Timelines. A timeline was indicated on a PowerPoint slide. There was some discussion on how many more drafts would be required; however, it was concluded that it is very difficult to decide this now. We should just focus on the timeline for the next month or two. This would include the incorporation of the corrections from this meeting as well as sections for critical habitat and allowable take. A new draft, Version 2 should be out to the recovery team in late November.

Recovery Priorities

The recovery priorities as they stood at the end of this meeting are listed below.

a) essential for recovery – high priority

- research on mitigation measures
- documenting potential interaction of leatherback turtles and the fishing industry
- comprehensive aerial surveys – working toward distribution information and a population estimate
- observer coverage (for those fisheries yet to have observer coverage)
- investigate habitat requirements in Canadian waters
- continuation of fishers outreach/research- e.g. NS Leatherback Turtle Working Group
- continuation of the tagging program
- understanding life history characteristics – working toward determining recovery feasibility

b) may promote recovery – medium priority

- sightings database
- international networking (e.g. providing funding to less developed countries for the International Sea Turtle Symposium)
- determining post release mortality
- continuation of stranding response

c) desirable – low priority

- understand impact of collisions (similar to oil and gas)

Meeting adjourned at 5:45.

Synopsis of March 25, 2004 Meeting

Members of the Atlantic Leatherback Turtle Recovery Team met on March 25, 2004, in the Hayes Boardroom at the Bedford Institute of Oceanography. Please see Appendix 21 for a list of participants. Please see Appendix 22 for a copy of the agenda for this meeting.

Agenda Items

Terms of Reference/role of team

The Team reviewed the original Terms of Reference to assess how well they have adhered to the terms. There was discussion on addressing socioeconomic impact of reducing and eliminating threats in the recovery strategy and it was concluded that a general statement could be added to the recovery strategy. A more detailed analysis will be completed in the action plan.

There was a comment regarding socioeconomic analyses and how they relate to decision making especially in terms of incidental harm permits (IHPs). This question was delayed until later in the day when the IHP process was outlined.

Another concern was raised regarding PEI fisheries and their lack of participation in this recovery strategy. It was concluded that they should be consulted appropriately on the draft strategy once it is finalized.

It was outlined that the minutes of all meetings will be summarized and produced as CSAS proceedings documents every year and that the team will have the opportunity to review them before they are posted.

Review of Draft Strategy

The draft strategy was reviewed and commented on. Corrections/suggestions were written into the document as the day progressed. As such, only items that resulted in considerable discussion are outlined below. Further, action items are outlined in attachment 29.

Acknowledgements
It was noted that we should consider who else might go into the acknowledgements section (i.e. peer review members, photo credits, map credits Pacific recovery team members etc...). These people should be added.

Background
Comments arose regarding the paragraph under the COSEWIC box and it was agreed that it should be edited to reflect the teams thoughts on the threats outlined here. We were reminded that what is in the box is not inaccurate and a lot of the discussion results from how the box is being interpreted. This can be made clearer in

the 'Note'. It was also agreed that the reader would be redirected for further information on global threats.

Distribution

There was a discussion on what maps to use in the strategy in order to most appropriately outline the distribution in Canadian waters. It was concluded that both maps should be used (and possibly a global distribution map) and that M. James' map would be specific to habitat. There will be paragraphs that explain the context of each map to make it clear to the reader. The distinctions need to be made very clear.

It was outlined that new information on distribution is about to be published and we might want to add this to the strategy. This can be done prior to consultations.

Critical Habitat

The text and map provided corresponds to telemetry data from 39 foraging animals but does not include observer data from pelagic longline. If it did, it would follow the shelf edge. Further, it does not include US observer data. There should be question marks in the appropriate areas (e.g. Gulf of St. Lawrence). Inferred habitat use is based on telemetry.

It was concluded that we are not in a position to define critical habitat in the legal sense and we need to add a new paragraph, which outlines this and our rational.

In using the map for habitat, we need to ensure that the appropriate caveats are included in the text and are very clear. This will ensure that it is distinguished from the distribution map.

It was also noted that we need to come up with a schedule of studies in order to identify critical habitat. The knowledge gaps section is a logical place to start.

Threats

A discussion ensued on whether the threats on nesting beaches out way threats in the open ocean and it was concluded that they were both important. We cannot say that one is more important than another.

There was a lot of discussion about the fact that the pelagic longline fishery is the only fishery off Nova Scotia that has systematically implemented a data collection process. This process is not a part of other fisheries. We need to make this clear and put it into context.

Outline of Process to Determine Allowable Harm

It was prefaced that things are often changing under the implementation of SARA because this is new legislation and DFO is still determining its full obligations under the act. In June of 2004 the prohibitions section of the act comes into force. This will make at an offence to kill, harm, harass, capture or take an individual of a listed species. Section 73 provides the minister with authority to authorize activity that interacts in a harmful manner with a listed species. In our case, the harm is incidental

to the carrying out of the activity. In addition, three conditions must be met (a) all reasonable alternatives have been considered, (b) all feasible measures to minimize the impact have been taken, and (c) activities will not jeopardize the survival or recovery of the species.

We have focused our energy on (c). Fisheries Management has the authority to license fisheries. There are a series of tools under the Fisheries Act that we can use including licenses and conditions of those licenses to authorize activity under section 73 of the SARA. First, we need solid advice from Science that the activity meets the preconditions; Science will provide their best position regarding what is known and understood. There was a meeting in mid-March to determine the structure of the advice from Science and they are currently reviewing the informa'ion on Leatherbacks with respect to these guidelines. After Fisheries Management receives the analysis from Science and FM, a memo to minister is generated and he has to approve it in time to put permits into place.

Fisheries management is currently looking at the pelagic longline – swordfish, trap and pot fisheries and this is just in the Scotia Fundy region.

Q. Are these for federally managed fisheries?
A. Yes.

Q. What happens if you miss a fishery? E.g. Lobster fishery – thought to be a non-issue b/c of the time of the fishery.
A. Hasn't been any determination. There isn't a blanket determination. It will be fishery-specific. Some activities are deemed to be of such low probability that no permit shall be issued. Don't get the impression that fishery officers are going to be cracking down on fishers. It's a new Act and we are just trying to come up with the best method.

Q. Is fishing the only activity that is being looked at?
A. Fisheries Management only deals with fisheries; however, we do have to consider all of the activities. It was suggested that DFO go through all of their permits to see if it's applicable - Ecotourism, recreation, science will have to be looked at.

It was noted that IHPs are meant to bridge the gap between June 1st and the finalization (signoff) of the recovery strategy. The Act enables that the Recovery Strategies and Action Plans be the vehicle to permit certain activities. The recovery strategy/action plan will include mitigative measures.

A Regional Advisory Process (RAP) is scheduled to take place March 31, 2004 to review information available to support the allowable harm permitting process. An invitation was sent to all team members.

Recovery Feasibility
Discussion took place on whether or not recovery is feasible, given the ability of Canada to make a difference, and the issue of threats in nesting beaches versus threats in the offshore was readdressed. It was concluded that the less that we engage in trading off language, the better we will be.

Performance Indicators
There were comments on the fact that this table would be obsolete in a matter of months, as there are National guidelines currently being created to address this issue. It was concluded that although this table might not fit the proposed process, it is quite helpful for different groups (e.g. Fisheries Management).

Discussion took place regarding our ability to assess recovery and the criteria in place to do this. It was concluded that the performance indicators section is the best that we can do given the lack of information we face. That is why we do not currently have a population target.

Next Steps

Peer Review
The team was asked to provide potential names for peer review. It was also suggested that we look to the Pacific group for cover letters. It was agreed that the reviewers should be well outside the realm of this team and perhaps include an NGO rep and someone from the Pacific team. Also, these people should have a variety of backgrounds including science and management.

Approvals process
The approvals process was outlined and it was agreed that it should be as transparent as possible. The hope is for the team to be involved in the process throughout.

Consultations
There are two types of consultations (formal and more general). The formal consultation on the recovery strategy will most likely be in the form targeted discussions with interested parties and affected stakeholders (these consultations do not include consultations on IHPs). The more general approach is through the public registry. It is the responsibility of DFO to run the formal consultations. It was noted that the Pacific strategy has a section on 'record of consultations' and the team felt that this would also be useful in our document.

Action Plan Development
It was outlined that DFO will not be in the position to develop action plans for some time, given the requirements for recovery strategies in the next year. However, this does not preclude others from initiating this process (linked with DFO). The current timeframe for an action plan as communicated in the recovery strategy is 2 years. It may be worthwhile revisiting this to ensure sufficient time to develop.

Meeting adjourned at 5:15 pm.

Appendix 1

List of Participants at the October 20, 2003 meeting of the North Atlantic Right Whale Recovery Implementation Team.

Name	Affiliation
Moe Brown	Center for Coastal Studies and Canadian Whale Institute
Jerry Conway	DFO – Fisheries Management
Derek Fenton	DFO – Oceans
Justin Huston	NS Government
Cathy Merriman	World Wildlife Fund
Deb Tobin	East Coast Ecosystems
Klaus Sonnenberg	Grand Manan Fisherman's Association
Steve Kempton	Coast Guard
Kirsten Querbach	DFO – Species at Risk Coordination
Arran McPherson	DFO – Species at Risk Coordination
Wendy Williams	DFO – Communications
Laurie Murison	Grand Manan Whale and Seabird Research Station
Rob Stephenson	DFO – Science
Arthur Bull	Fundy Marine Resources Centre
Chris Taggart	Dalhousie University

Members of the team who are included on the email distribution list but were absent from the meeting: Hubert Saulnier, John Logan, Richard Goddard, Graham Daborn, Marianne Janowicz, Nancy Witherspoon, Fred Webster, Mark Elderkin, Bob Rangely, and Kevin Davidson

Appendix 2

Agenda for the October 20, 2003 meeting of the North Atlantic Right Whale Recovery Implementation Team

9:00 – 9:45 WELCOME AND OPENING REMARKS

- Introductions
- AGENDA - Review and Approval
- Old business from last meeting
- Updates
  - Shipping lanes
  - Conservation measures for Roseway Basin
  - Births and Mortalities
  - MOU with the Center for Coastal Studies
  - Entanglements

9:45 – 10:15 Habitat Stewardship Program (Querbach)

- Outline of Program
- Review Process
- Potential Projects

10:15 - 12:00 Recovery Strategy Update (McPherson?)

- Due in 2004/2005
- Process
- Critical Habitat, action plans, etc.

12:00 – 12:45 LUNCH BREAK

12:45 - 2:30 Recovery Priorities (McPherson)

- Identify Projects Essential for Recovery
- Identify Projects that May Promote Recovery
- Identify Projects Desirable for Recovery

2:30 - 2:45 COFFEE BREAK

2:45 - 3:10 SARP Funded Science Project Updates (Stephenson)

4:00 - 4:30 Other business

*Coffee/tea and Lunch will be provided in the meeting room

Appendix 3

List of Participants at the April 30, 2003 meeting of the Inner Bay of Fundy Atlantic Salmon Recovery Team

Name	Affiliation
Roddy MacDonald	DFO - FM, SABS
Larry Marshall	DFO - DFD, BIO
Greg Stevens	DFO,FM, Dartmouth
Vince Smith	DFO - C&P, Parrsboro
Kevin Davidson	EC, CWS, Sackville, NB
Jack Johnson	Cobequid Salmon Assoc.
John MacMillan	NSDAF - Inland Fisheries
Lewis Hinks	Atlantic Salmon Federation
Carl Purcell	Nova Scotia Salmon Assoc.
Rita Almon	Big Salmon River Anglers Assoc.
Lynn Tobias	Big Salmon River Anglers Assoc.
Carys Burgess	Nova Scotia Power Inc. - Hydro
Peter Amiro	DFO - DFD, BIO
Jamie Gibson	DFO - DFD, BIO
Shane O'Neil	DFO - DFD, BIO
Trevor Goff	DFO - DFD, Mactaquac
Lynn Cullen	DFO - SAR, BIO

Appendix 4

Agenda for April 30, 2003 meeting of the Inner Bay of Fundy Atlantic Salmon Recovery Team

1. Introductions
2. Review Agenda
3. Review action items from November 22, 2002 Minutes
4. Species at Risk Act – K. Davidson
5. Critical Habitat – P. Amiro
6. Communications/Stewardship – C. Myers (Item deferred to fall meeting due to C. Myers absence).
7. Fishery regulations & illegal introductions – G. Stevens
8. Recommendations to combine Monitoring and Research technical groups and Cultural Genetics Technical Groups
9. Update of proposed 2003 activities by Technical Committees – L. Marshall
10. DFO June RAP – L. Marshall
11. Other items (added at meeting):
    - Minutes of Meetings to be compiled in 'Proceedings Series' of the DFO Canadian Science Advisory Secretariat – L. Cullen
    - C & P Activities & Public Education
12. Next Meeting

Appendix 5

List of Participants at the September 30, 2003 meeting of the Inner Bay of Fundy Atlantic Salmon Recovery Team

Name	Affiliation
Larry Marshall	Science; DFO
Peter Amiro	Science; DFO
Patrick O'Reilly	Science; DFO
Trevor Goff	Science; DFO
Ross Jones	Science; DFO
Rene Wissink	Parks
Alain Caissie	Parks
Lewis Hinks	Atlantic Salmon Federation
Jim Kierstead	Conservation & Protection; DFO
Vince Smith	Conservation & Protection; DFO
Arran McPherson	Science; DFO
Murray Rudd	Policy & Economics; DFO

Appendix 6

Agenda for the September 30, 2003 meeting of the Inner Bay of Fundy Atlantic Salmon Recovery Team.

1. Review Agenda
2. Review RT Minutes/Action items April 30 (& Planning Group Minutes/ Action items Apr 29)
3. Brief overview of 2003 activities (brought forward from Planning Group), e.g.,

    -DFO Science
    - Monitoring & Research
    - Genetics and Fish Culture
    - June RAP

    -Fort Folly Habitat Recovery
    -NSDAF (deferred)
    -NBDNRE (deferred)
    -Cumberland Co. River Enhancement Assoc. (deferred)
    -Upper Bay of Fundy Biosphere Initiative Society (deferred)
    -DFO Socio-economics
    -DFO Maritimes Fishery Regulations (deferred)
    -DFO Conservation and Protection
    -Communications Subcommittee (deferred)
    -AMEC smolt trials (deferred)
    -Others
4. HSP process/ guidelines for 2004/05 project development
5. Redrafting of SARA compliant Recovery Strategy for 2004/05
6. Prioritized list of projects for 2004
7. Repository for RT Minutes
8. Other items
9. Proposed Date for Next Meeting

Appendix 7

List of Participants at the November 21, 2003 meeting of the Inner Bay of Fundy Atlantic Salmon Recovery Team

Name	Affiliation
Larry Marshall	DFO, Science
Patrick O'Reilly	DFO, Science
Carl Purcell	NS Salmon Association
Lewis Hinks	Atlantic Salmon Federation
Greg Stevens	DFO, Resource Management
Tim Nye	Fort Folly First Nations
Harvey Millar	DFO, C&P
Carys Burgess	NS Power Inc.
Rene Wissink	Fundy National Park
Anita Hamilton	DFO, Habitat Management
Trevor Goff	DFO, Mactaquac
Shane O'Neil	DFO, Science
Ross Jones	DFO, Moncton
Kirsten Querbach	DFO, Species at Risk Coordination
Peter Amiro	DFO, Science
Lynn Cullen	DFO, Species at Risk Coordination

Appendix 8

Agenda for November 21, 2003 meeting of the Inner Bay of Fundy Atlantic Salmon Recovery Team

1. Welcome/opening remarks (Co-Chairs)
2. Review Agenda
3. Review Planning Group/ RT Minutes/Action items Sept 30, 2003 (April 30 Minutes reviewed Sept 30)
4. Brief overview of 2003 activities
   - DFO Science
     - Monitoring & Research.
     - Genetics & Fish culture
   - Dept. Heritage FNP
   - Fort Folly Habitat Recovery & progress with AAROM initiatives (?)
   - NSDAF – *representative not present to provide this, item deferred*
   - NBDNRE - *representative not present to provide this, item deferred*
   - Cumberland Co. River Enhancement Assoc. - representative *not present to provide this, item deferred*
   - Upper Bay of Fundy Biosphere Initiative Society - *representative not present to provide this, item deferred*
   - DFO Socio-economics - *representative not present to provide this, item deferred*
   - DFO Maritimes Fishery Regulations
   - DFO Conservation and Protection
   - DFO HSP Coordinator
   - Communications and Public Awareness Technical Committee
   - AMEC smolt trials - *representative not present to provide this, item deferred*
   - Others
5. Recommendations from Planning Group re:
   - A. Priorities/ action items for 2004
   - B. Appendix- iBoF Implementation plans relevant to recovery objectives
6. Process for redrafting of SARA compliant Recovery Strategy by Jan 1/ 04
7. Other items
8. Date for Next Meeting

Appendix 9

List of Participants at the April 10, 2003 meeting of the Atlantic Whitefish Conservation and Recovery Team

Name	Affiliation
Larry Marshall, Co-chair	DFO – DFD BIO
John Gilhen, Co-chair	NS Museum of Natural History
Mark Elderkin	NS DNR
John Mills	NS DNR
Mike Fox	Town of Bridgewater
Carys Burgess	NSPI
Tara Crandlemere	NS Inland Fisheries
Doug Bell	Petite Riviere Salmon Assoc.
Dan Hasselman*	DFO/Acadia University
John O'Brien	
Jason LeBlanc*	NS Inland Fisheries, Pictou
Jill Comolli*	South Shore Naturalists
Gary Selig*	DesBrisay Museum
Jeff Purdy	DFO C&P Yarmouth
Greg Stevens	DFO – FM Marine House
Carl Myers*	DFO-Communications BIO
Rod Bradford	DFO – DFD BIO
Patrick O'Reilly	DFO – DFD BIO
David Longard	DFO – DFD BIO
Phillip Longue	DFO – DFD Bridgewater
Bev Davison	DFO- Mersey Biodiversity Facility.
John Whitelaw	DFO- Mersey Biodiversity Facility.
Lynn Cullen*	DFO - SARC

*Members of the Communications and Public Awareness Sub-Committee along with Ken Meade

Appendix 10

Agenda for the April 10, 2003 meeting of the Atlantic Whitefish Conservation and Recovery Team

1. Opening Remarks/ Round table introductions.

2. Review of Minutes and reporting on *Action Items*, inc. present outlook for HSP and SARCEP funding.

3. Report from the Communications and Public Awareness Sub-Committee.

4. Discussion re: need for information repository

5. Progress report on socio-economics (M. Rudd).

6. Update on web publication by Clair et. al. on MAGIC and base ion recovery of Southern Uplands catchments (L. Marshall).

7. Letter of interest for the display of Atlantic whitefish at Huntsman Marine Lab. (M. Costello)

8. Appendix 3 from Nov 29, (Recovery Objectives and Action Plans): review, reporting on *Action Items* and Update for Field Season '03.

9. Other items added to agenda at meeting:
   - RFAC request to stocking Sea Run Speckled Trout in Petite Rivier
   - Conservation License Plate
   - Summer Student working with NS DNR
   - Fish passage on Petite Riviere
   - Support for additional Water Quality testing by Town with 5-yr loan of Advanced Hydrolabs
   - Stocking sites for landlocked Atlantic whitefish
   - Minutes of meetings in DFO "Proceedings Series" (information item not discussed but is included in these minutes for information of the entire team)

10. Next Meeting

11. Adjournment

Appendix 11

List of Participants at the September 24, 2003 meeting of the Atlantic Whitefish Conservation and Recovery Team.

Name	Affiliation
Andrew Hebda	NS Museum of Natural History
Bev Davison	DFO - Mersey Biodiversity Facility.
Carl Myers	DFO - Communications BIO
Crystal Doggett	Bluenose ACAP
Dan Hasselman	Dalhousie University
David Longard	DFO – DFD BIO
Don MacLean	NSDAF
Greg Stevens	DFO – FM Marine House
Heidi Bishop	NSDAF
Ian Marshall	DFO - FM Yarmouth
Jason LeBlanc	NS Inland Fisheries, Pictou
Jill Comolli	South Shore Naturalists
John Gilhen, Co-chair	NS Museum of Natural History
John Whitelaw	DFO - Mersey Biodiversity Facility.
Kim Murray	Dalhousie University
Kirsten Querbach	DFO – Species at Risk Coordination Office - BIO
Larry Marshall, Co-chair	DFO – DFD BIO
Lynn Cullen	DFO – Species at Risk Coordination Office - BIO
Mark Weare	Bluenose Bassmasters/CASA
Mike Fox	Town of Bridgewater
Murray Rudd	DFO - Policy & Economics
Paul Bentzen	Dalhousie University
Phillip Longue	DFO – DFD Bridgewater
Rod Bradford	DFO – DFD BIO
Scott Mossman	DFO – C&P Liverpool
Shane O'Neil	DFO – DFD BIO

Appendix 12

Agenda for September 24, 2003 meeting of the Atlantic Whitefish Conservation and Recovery Team

Welcome/opening remarks (Co- Chairs)

Review of Minutes/Action items (inc. App. 3 Action Plans) from April 10 (Co- Chair)

HSP process/ guidelines for 2004/05 project development (Querbach)

Activity updates

- DFO Science (Bradford/Whitelaw/O'Neil)
- NSDAF Affect of smallmouth bass on Atlantic whitefish (LeBlanc)
- NSP Stewardship of Atlantic whitefish habitat (Burgess) - **deferred**
- NSDNRE Municipal & community stewardship (Elderkin) - **deferred**
- Bridgewater Public service Commission (Fox)
- Socio economics (Rudd)
- Maritimes Fishery Regulations (Stevens)
- Communications and Public Awareness Subcommittee (Myers)

Listing , prioritization and potential source of funding ($) of desirable recovery projects for 2004-05 (Chair)

1. Essential for recovery (high priority)
2. May provide recovery (medium priority)
3. Desirable for recovery (low priority)

Request to stock sea-trout (Chair/ LeBlanc)

Whitefish exhibits (Co-Chair)

Repository for RT Minutes (Co-chair)

Sarty Pond (Comolli)

Other items - **none**

Next meeting

Appendix 13

List of Participants at the November 27, 2003 meeting of the Atlantic Whitefish Conservation and Recovery Team

Name	Affiliation
Ian Marshall, Co-chair	DFO – Yarmouth
John Gilhen, Co-chair	NS Museum of Natural History
Mark Elderkin	NS Department of Natural Resources
Mike Fox	PSC – Town of Bridgewater
Brooke Cooke	BCAF
Crystal Dogget	BCAF
Jason LeBlanc	NS Department of Agriculture and Fisheries
Heidi Bishop	NS Department of Agriculture and Fisheries
Thomas Wheaton	DFO – Habitat – Bridgewater
Lynn Cullen	DFO – Species at Risk
Carl Myers	DFO – Communications
Rod Bradford	DFO – Science
Greg Stevens	DFO - Resource Management

Appendix 14

Agenda for the November 27, 2003 meeting of the Atlantic Whitefish Conservation and Recovery Team

Introduction

Review of September 24/03 Minutes

Business Arising

Stocking Criteria/Site Selection for Stocking of Atlantic Whitefish (Bradford)

Activity Updates

HSP Review- BCAF(Chair)

Communication & Public Awareness SubCommittee (Myers)

NSP Stewardship Of Atlantic Whitefish Habitat (NSP)

NSDNRE & Municipal Stewardship (Elderkin)

Socio-Economic (Rudd)

Sarty's Pond

Other items

Next Meeting

Appendix 15.

List of Participants at the March 21, 2003 meeting of the Lake Utopia Dwarf Smelt Recovery Team

Name	Affiliation
Arran McPherson	DFO, Species at Risk Coordinating Office
Kirsten Querbach	DFO, Species at Risk Coordinating Office
Rod Currie	NBWF
Steve Currie	NB DNRE
Maureen Toner	NB DNRE
Mary Sabine	NB DNRE
Kathryn Collet	NB DNRE
Russell Fergusen	Heritage Salmon
Rod Bradford	DFO
Doug Rowland	Consultant
John Gilbert	JD Irving Ltd.
Allen Curry	UNB/NBCFWRU
Kent Smedbol	DFO SABS
Murray Rudd	DFO Policy and Economic
Pam Seymour	NB DNRE
Peter Cronin	NB DNRE

Appendix 16

Agenda for the March 21, 2003 meeting of the Lake Utopia Dwarf Smelt Recovery Team

9:00 a.m.	Coffee
9:15 a.m.	Welcome and review of the minutes from the last meeting
9:30 a.m.	Election/Appointment of Co-chairs (DFO and non-DFO)
10:00 a.m.	NB Field Season Results (update)
10:30 a.m.	Discussion of the draft recovery strategy including process/progress to date
10:45 a.m.	Review of strategy format and required elements
11:15 a.m.	Review of general goal and objectives
12:30 p.m.	Lunch (provided)
1:00 p.m.	Specific discussion of the strategy – identification of missing elements and process for providing information • population distribution target • critical habitat • allowable take • threats • required research
2:30 p.m.	Health break
2:45 p.m.	Communication initiatives/2003/04 proposal submissions
3:00 p.m.	Other items Determine next meeting date
4:00 p.m.	Adjourn

Appendix 17

List of Participants at the October 1, 2003 meeting of the Lake Utopia Dwarf Smelt Recovery Team

Name	Affiliation
Arran McPherson	Chair: DFO – Species at Risk Coordination Office
Steve Currie	NB DNR
Maureen Toner	NB DNR
Kathryn Collet	NB DNR
Russell Ferguson	Heritage Salmon
Allen Curry	UNB/NBCFWRU
Jennifer Shaw	UNB
Kent Smedbol	DFO SABS
Murray Rudd	DFO Policy and Economics
Peter Cronin	NB DNR
Susan Farquarson	Eastern Charlotte Waterways
Melinda Hauson	Eastern Charlotte Waterways

Appendix 18

Agenda for the October 1, 2003 meeting of the Lake Utopia Dwarf Smelt Recovery Team.

9:00 a.m.	Coffee
9:30 a.m.	Welcome and review of the minutes from the last meeting
9:45 a.m.	Update of 2003 field season
10:15 a.m.	Overview of the Habitat Stewardship Program
11:00 a.m.	Identification of Recovery Priorities for 2003-04
11:30 a.m.	Review of draft recovery strategy • population distribution target • objectives • critical habitat • threat analysis • allowable harm • appendices • action plans? Including socio-economic impact
12:00 p.m.	Lunch (provided)
12:30 p.m.	Continue review of draft recovery strategy
3:00 p.m.	Coffee Break
3:15 p.m.	Other Items including date of next meeting

Appendix 19

List of Participants at the October 16, 2003 Meeting of the Atlantic Leatherback Turtle Recovery Team

Name	Affiliation
Robert Jones	DFO – Science, NHQ - co-chair
Cathy Merriman	World Wildlife Fund, Halifax – co-chair
Kirsten Querbach	DFO-Species at Risk Coordination
Jerry Conway	DFO – Resource Management
Catherine Hood	DFO-Science, NFLD Region
Mike James	Dalhousie University
Penny Doherty	Ecology Action Centre
Troy Atkinson	(By Phone) Nova Scotia Swordfishermen's Association
Jim McMillan	DFO-Science
Cheryl Ryder	(By Phone) National Marine Fisheries Service – Office of Protected Resources, USA
Odette Murphy	DFO-Fisheries Management
Don McAlpine	New Brunswick Museum
Derek Fenton	DFO – Oceans
Gerard Peters	DFO – Policy

Appendix 20

Agenda for the October 16, 2003 meeting of the Atlantic Leatherback Turtle Recovery Team.

Introduction/Objectives:
- Roundtable, introduce new chair, meeting objectives, etc.

Background:
- October/December team meeting outputs
- decision to form sub-group
- process to produce 1st draft
- Pacific LBT recovery strategy

DRAFT Recovery Strategy - v.1:
General comments – roundtable, general reactions to process/contents

Break

DRAFT Recovery Strategy (cont'd)
Specific comments – section by section review and discussion of comments submitted by team members

Lunch (provided)

DRAFT Recovery Strategy (cont'd)

Break

Next steps:
- outstanding processes (Critical Habitat, IHP)
- timeline/process to produce v.2.

Habitat Stewardship Program/Priority areas for Funding

Appendix 21

List of Participants at the March 25, 2004 meeting of the Atlantic Leatherback Turtle Recovery Team

Name	Affiliation
Robert Jones	DFO – Science, NHQ - co-chair
Cathy Merriman	World Wildlife Fund, Halifax – co-chair
Kirsten Querbach	DFO-Species at Risk Coordination
Catherine Hood	DFO-Science, NFLD Region
Mike James	Dalhousie University
Penny Doherty	Ecology Action Centre
Chantale Thiboutot	DFO-Fisheries Management, Quebec Region
Troy Atkinson	Nova Scotia Swordfishermen's Association
Jim McMillan	DFO-Science
Kathleen Martin	Nova Scotia Leatherback Turtle Working Group
Cheryl Ryder	National Marine Fisheries Service – Office of Protected Resources, USA
Odette Murphy	DFO-Fisheries Management
Don McAlpine	New Brunswick Museum
Derek Fenton	DFO – Oceans
Murry Rudd	DFO-Policy
Gary Weber	DFO – Fisheries Management

Appendix 22

Agenda for the March 25, 2004 meeting of the Atlantic Leatherback Turtle Recovery Team

Objectives:

- Discuss/reach consensus on suggested major revisions to the draft recovery strategy
- Discuss general processes for draft strategy to be submitted for peer review and ministerial approvals within Fisheries and Oceans
- Assign action items and establish timelines for any outstanding work to be completed

Overview of the meeting

Introduction/Roundtable/Objectives

Terms of Reference/role of team

Review and finalize DRAFT Recovery Strategy

- Section by section review, team members to come prepared with general comments
- Critical habitat identification section review
- Process for determining allowable harm

Next steps:

- addressing outstanding comments
- peer review
- approvals process
- timelines
- Action plan development

Other business

Appendix 23

List of Attachments

#	Item	Meeting Name	Meeting Date
1	Requirements for SARA compliant Recovery strategy	Right Whale RT	Oct. 20, 2003
2	Recovery planning process	Right Whale RT	Oct. 20, 2003
3	Prioritized list of projects	Right Whale RT	Oct. 20, 2003
4	List of proposed activities for 2003	IBOF Salmon RT	April 30, 2003
5	Presentation and overview of 2003 Monitoring activities	IBOF Salmon RT	Nov. 21, 2003
6	Graphical presentation of electrofishing density surveys	IBOF Salmon RT	Nov. 21, 2003
7	Population Dynamics model	IBOF Salmon RT	Nov. 21, 2003
8	Mactaquac - summary of fish on hand and distributed	IBOF Salmon RT	Nov. 21, 2003
9	Presentation of the field program on the BSR	IBOF Salmon RT	Nov. 21, 2003
10	Fort Folly Summary results from telemetry equipment in the Bay	IBOF Salmon RT	Nov. 21, 2003
11	NSPI Downstream salmon smolts counts	IBOF Salmon RT	Nov. 21, 2003
12	NS Biodiversity facilities - summary overview of collections and holdings in 2003	IBOF Salmon RT	Nov. 21, 2003
13	Presentation on Genetics and Cryopreservation	IBOF Salmon RT	Nov. 21, 2003
14	AAROM (Aboriginal Aquatic Resource Oceans Monitoring) An Overview	IBOF Salmon RT	Nov. 21, 2003
15	Enforcement report for 2003 season	IBOF Salmon RT	Nov. 21, 2003
16	Communications sub-group draft communications plan	IBOF Salmon RT	Nov. 21, 2003
17	Monitoring and research proposed activities – 2004	IBOF Salmon RT	Nov. 21, 2003
18	ATK Survey	Atlantic Whitefish RT	Apr. 10, 2003
19	Report from communications sub-committee conf. calls	Atlantic Whitefish RT	Apr. 10, 2003
20	Recovery objectives and action	Atlantic Whitefish	Apr. 10, 2003

#	Item	Meeting Name	Meeting Date
	plans	RT	
21	NSDAF project details	Atlantic Whitefish RT	Sept. 24, 2003
22	DRAFT RIAS document	Atlantic Whitefish RT	Sept. 24, 2003
23	English version of newspaper advertisement	Atlantic Whitefish RT	Sept. 24, 2003
24	Listing/ Prioritization of Projects and Potential Sources of Funding	Atlantic Whitefish RT	Sept. 24, 2003
25	DFO and NSDAF stocking history	Atlantic Whitefish RT	Sept. 24, 2003
26	Requirements for SARA compliant Recovery Strategy	Atlantic Whitefish RT	Nov. 27, 2003
27	BCAF HSP funding Pre-proposal	Atlantic Whitefish RT	Nov. 27, 2003
28	Assessment of threats and other barriers to recovery	LUD Smelt RT	Mar. 21, 2003
29	Action Items from Leatherback Turtle Recovery Team Meeting	Leatherback Turtle RT	Mar. 25, 2004

Attachments For Document:
DFO 2004
Proceedings of the Maritimes Region
Species at Risk Recovery Teams:
Meeting of 2003 - Proc. 2004/041

Attachment 1

Status of North Atlantic Right Whale Recovery Strategy –SARA Compliance

Maritimes Region Recovery Strategy* Guidelines
Suggested Format and Required Content – Assessment of the Current Right Whale Recovery Strategy.

1. Status of species
    - COSEWIC designation – No, the plan was created before this.
    - Reasons for designation – No, as above.
    - Historic/current distribution and abundance information – Yes, this seems very complete. Perhaps there is new information to add?
2. Statement of recovery feasibility – No.
3. Recovery objectives
    - Long-term objectives (population and distribution objectives that if met would be considered "recovery" by the team) – Yes, there is an interim target population size stated (1200 individuals); however, the value was determined in an arbitrary manner (as the document admits to). It would be preferable to have some scientific basis for this value (if available) for the updated strategy.
    - Short-term objectives (5 year target) – There are many recommendations that will fall within this time line; however, they are not explicitly listed as a 5 year target. Shouldn't be difficult to update.
4. Species description that is consistent with COSEWIC report that includes species:
    - Ecology - Yes, very thorough. Perhaps new information should be added?
    - Biology - Yes, very thorough. Perhaps new information should be added?
    - Needs – This isn't an explicit section but it is addressed throughout. Could be extracted.
    - Identification of knowledge gaps – This isn't an explicit section but it is addressed throughout. Perhaps it would be a good idea to extract this information and add to it under a table or list?
5. Habitat Requirements
    - Identification of critical habitat to the extent possible based on the information available – This has not been addressed in Canadian waters; however, the American critical habitat areas are mapped out. This issue will be extremely important and we believe that a scientific and thus, defendable determination of CH should be undertaken. For other teams, we have suggested acquiring an 'expert opinion' through a panel of experts as the preferable path to take.
    - Examples of activities likely to lead to habitat destruction – Yes.
    - Schedule of habitat studies when information is inadequate – This has been addressed to some extent but requires more work. For example, if the panel on CH decides that there is insufficient information, a schedule of studies to address CH will be required.
6. Assessment of threats and other barriers to recovery
    - Recommendations to mitigate these threats including measures already in place –Yes, very thorough.
    - General description of the research and management activities needed to meet short and long term recovery objectives – This has been addressed to some extent in Strategy E; however, it should be added to. Further, the focus is on research as opposed to management, which will need to be addressed.
    - Statement of allowable activities/level of permissible harm – No, but I assume it is zero given the status of this species so it would be a matter of stating it (correct me if I am wrong).
7. Statement of when one or more action plans will be completed – Not explicitly but it is inter-linked as many aspects of the AP are imbedded in this document. If you decide to separate the RS from the AP, this section may become irrelevant, as the AP would be complete. Of course, this might depend on the mandate of the implementation team.
8. Appendices: References to pertinent studies – References pertain to those cited. It appears to be quite extensive; however, you might want to add references that are not cited for the readers' information.

*This list refers to only the Recovery Strategy and does not include required elements of an Action Plan.

Attachment 2

North Atlantic Right Whale – Draft Recovery Planning Process for a SARA-Compliant Recovery Strategy

BACKGROUND

The North Atlantic (NA) right whale has been designated as *endangered* since 1980 and was recently reaffirmed as such in May 2003 based on an updated COSEWIC status report. The main reasons for this designation included the very low current population abundance (approximately 322 individuals) and threats from ship strikes and entanglement in fishing gear (COSEWIC, 2003).

The Species at Risk Act (SARA) came into force on June 5th, 2003 and includes a specific legal framework for recovery planning. Fisheries and Oceans Canada (DFO), as the lead agency with jurisdiction for the conservation and protection of the NA right whale, has a responsibility to create a SARA-compliant Recovery Strategy and subsequent Action Plan under this new legislation. The focus of this document is the development of the Recovery Strategy. A multi-stakeholder Recovery Team developed the current NA Right Whale Recovery Strategy in 2000 and subsequently an Implementation Team was formed to undertake implementation of the Strategy.

In order to facilitate the inclusion of the SARA requirements in the Recovery Strategy, a Recovery Working Group (RWG) comprising DFO members (K. Smedbol and K. Querbach) and the NA Right Whale Implementation Team Chairs (M. Brown and J. Conway) has been formed and tasked with updating the existing Strategy. The RWG members desire input from the full Implementation Team to complete this task. Therefore, the RWG will draft a SARA-compliant Recovery Strategy for review by the current Implementation Team. After the Team has provided input, DFO will enter into broader consultation. Comments obtained during this consultation process will be incorporated into the Strategy by the RWG, with input from the Implementation Team when necessary.

Given the aforementioned new requirements for recovery planning under SARA, DFO has drafted guidelines for both the RWG and the Implementation Team. They are presented below.

RECOVERY WORKING GROUP

Purpose

To provide DFO with a SARA-compliant Recovery Strategy for the NA right whale.

Activities

- make compliant all aspects of the Strategy including, but not limited to, species status, species background information, statement of recovery feasibility, habitat requirements, identification of critical habitat and recovery objectives
- provide drafts to the Implementation Team for review
- consider all comments and suggestions made by the Team and other experts
- consider comments made during broader consultation

Participation

All members are expected to assist in the drafting process and other persons may be called upon regarding specific sections as necessary.

IMPLEMENTATION TEAM

Purpose

To advise RWG on the development of a SARA-compliant Recovery Strategy for the NA right whale.

Role

To advise the RWG on:

- the updated goals and objectives for the recovery of the NA right whale
- considerations needed to ensure the recovery of the NA right whale including, but not limited to, environmental, biological, technical and socio-economic issues
- public education and outreach related to the SARA-compliant Recovery Strategy
- habitat requirements and critical habitat
- the feasibility of recovery
- the effectiveness of recovery actions and the implementation thus far of the existing Recovery Plan

Membership

Membership will be composed of individuals with a variety of backgrounds, interests and experience that will bring knowledge pertinent to the development of a SARA-compliant Recovery Strategy. Members will represent those interested parties including, but not limited to, DFO, universities, conservation groups, aboriginal groups and stakeholders that have expertise to comment on the Strategy. The current North Atlantic right whale Implementation Team membership is being contacted in reference to continued participation in this re-structured process. Potential new members will be identified and approached.

Participation

Meetings will be held when required to review aspects of the SARA-compliant Recovery Strategy. Meetings will be scheduled according to the SARA-compliant Strategy timelines and the times/places will be determined based on the convenience to the Team members. Minutes from the meetings will be prepared and distributed by DFO or delegate and published annually in the DFO Proceedings Series.

All members of the Implementation Team shall become familiar with the material provided by RWG such that they can contribute to the revision of draft Strategy and the discussions at meetings. All comments and suggestions by the Team will be taken into consideration. If consensus on an issue is not achieved between the Implementation Team and the RWG, the Co-chairs may seek guidance from the DFO Species at Risk Co-ordinators for the Maritimes Region.

Chairs

The Implementation Team Chairs will remain the same throughout the process of drafting the Strategy and Action Plan (i.e. Moe Brown (CWI) and Jerry Conway (DFO)) unless otherwise directed by the Team and/or the current Chairs themselves.

Attachment 3

Recovery Priorities for the North Atlantic Right Whale – October 2003

	Essential for Recovery = 1 May Promote Recovery = 2 Desirable for Recover = 3	**Priority**
A.	**Reduce mortality and injury related to vessel strikes.**	
A.1	Analyze all available data on the seasonal and interannual distribution of right whales in the Bay of Fundy and evaluate the extent to which alterations in vessel traffic routing would reduce the risk of collisions.	**Done**
A.2	Conduct similar analyses for the Roseway Basin area and other areas in Canada where vessel strikes on right whales are known to have occurred or are considered likely to occur in the future.	**1 and in progress**
A.3.	Expand, refine, and continually update programs to educate mariners about the problems facing right whales and the ways in which changed vessel-operation procedures will help address those problems.	**Done**
A.4	Conduct research on how right whales respond to oncoming vessels and on what cues elicit a response.	**1**
A.5	Put the locations of right whale conservation areas on the Internet (e.g., DFO web site) and on marine charts of eastern Canada, with notes of caution and references to the Annual Notice to Mariners.	**Done**
A.6	Expand the existing warning and reporting system for right whales.	**3**
A.7.	Identification of new Critical Habitats	**1**
B.	**Reduce the frequency (and severity) of entanglement and entrapment in fishing gear.**	
B.1	Establish a disentanglement network in eastern Canada that includes caches of needed equipment and teams of trained personnel at strategic locations.	**1 and in progress**
B.2	Develop a reporting system for entangled or entrapped right whales.	**2**
B.3	Educate fishermen about the ways in which they can, through voluntary action, reduce the frequency of interactions between right whales and fishing operations.	**1**
B.4	Consider time and area fishing closures that will reduce the amount of overlap, in time and space, between fishing gear and right whales.	**1**

	Essential for Recovery = 1 **May Promote Recovery = 2** **Desirable for Recover = 3**	**Priority**
B.5	Subject to careful review any initiative to expand the use of gear known to be a problem for right whales (e.g., gillnets, longlines, offshore lobster and crab "trawl" gear) into right whale feeding areas.	1
B.6	Investigate the use of gear modifications to reduce the incidence and severity of entanglements and entrapments.	2
B.7	Investigate ways of compensating fishermen for gear damage and lost fishing time when it can be shown that their actions have contributed to a right whale's rescue.	2
B.8	Consider the impact of existing fisheries on right whales and attempt to evaluate the effectiveness the measures above.	2
C.	**Minimize disturbance caused by human activities.**	
C.1	Define "disturbance" of right whales and encode the definition in the Marine Mammal Regulations.	**Govt activity**
C.2	Review what is known about acoustic deterrents (e.g., pingers, acoustic harassment devices) that are being used in areas inhabited by right whales, and establish appropriate guidelines for their use.	1
C.3	Subject proposed or ongoing human activities that produce loud underwater sound to a stringent assessment process, with specific reference to right whales, and regulate such activities so as to avoid, reduce, or eliminate disturbance.	1
C.4	Identify one or more areas of right whale habitat as "Areas of Interest" in the Marine Protected Areas Program under the Oceans Act.	3
C.5	Ensure that people operating vessels in the vicinity of right whales, and in particular whale-watchers, do not have an adverse effect on the whales.	2
C.6	Establish reasonable, precautionary terms for the management of research activities involving right whales in Canadian waters.	3
C.7.	Investigate the disturbance caused by human activities and the potential for mitigation	1
D.	**Reduce exposure (both direct and via food webs) to chemical contamination and other forms of habitat degradation.**	
D.1	Reducing the probability of catastrophic spills of oil and other toxic substances in areas used by right whales.	3

	Essential for Recovery = 1 **May Promote Recovery = 2** **Desirable for Recover = 3**	**Priority**
D.2	Prepare and implement an emergency-response protocol for incidents involving spills of dangerous substances in right whale habitat.	**1**
D.3	Subject proposed or ongoing human activities that carry risks of acute or chronic contamination of the marine environment or other forms of habitat destruction to a stringent assessment process, and regulate such activities so as to avoid, reduce, or eliminate potential threats to right whales and their prey base.	**1**
D.4	Subject any proposed development in the Bay of Fundy or Gulf of Maine that would affect salinity or circulation (e.g., tidal power projects, river damming, breakwater construction) or otherwise alter marine conditions (e.g., bridge or causeway construction) to a stringent assessment process that explicitly takes account of the potential impacts on right whales and their habitat.	**1**
D.5	Define, evaluate, and attempt to address cumulative impacts of habitat degradation on right whales (including disturbance as covered in Strategy C). May duplicate C7.	**1**
D.6	Establish a formal mechanism to ensure timely notification and thorough consultation by the Department of Defence with the DFO concerning the potential impacts on right whales of military exercises in eastern Canadian waters.	**done**
D.7	Ensure that right whales are taken into account in decisions related to coastal zone development, including aquaculture. May duplicate D4.	**1**
D.8	Prevent the initiation of "forage" fisheries that could have deleterious effects on right whales.	**N/A – already covered in D3**
E.	**Monitor the population and conduct research needed to better understand and address ongoing threats.**	
E.1	Monitor the whale population through annual surveys that incorporate photo-identification and biopsy sampling and thorough necropsies of salvaged carcasses.	**1**
E.2	Establish protocols and provide resources to ensure that dead right whales are salvaged	**1**
E.3	Investigate the response thresholds (behavioural and physiological) of right whales to acoustic stimuli, with the objective of documenting and defining "acoustic disturbance."	**1**
E.4	Investigate, through directed research, consultation, and field trials, methods to reduce the incidence of vessel strikes and gear entanglement.	**1**
E.5	Develop a method of estimating ages of individual right whales.	**3**

	Essential for Recovery = 1 **May Promote Recovery = 2** **Desirable for Recover = 3**	**Priority**
E.6	Improve understanding of the distributional ecology of right whales.	**1**
E.7	Refine the technology for attaching instruments (e.g., satellite-linked radio transmitters) to right whales that will make it possible to track their movements over long periods (months to years).	**2**
E.8	Continue and expand efforts to document contaminant levels in right whales, and study the implications by analogy with other species.	**2**
E.9	Model the population dynamics of right whales.	**1**
E.10	Investigate the mating system of right whales.	**2**
E.11	Monitor the physiological condition of right whales in relation to their reproductive performance.	**2**
E.12	Compare the genetic variability in historical museum specimens (e.g., baleen, bone) with that in recent samples (from biopsies and necropsies) and between whales found in the Bay of Fundy and offshore	**1**
E.13	Analyze past trends in zooplankton distribution and production in eastern Canadian waters, and relate these to data on the annual distribution of right whales.	**1**
E. 14	Investigate the characteristics of individual right whales that are "prone" to entanglement or entrapment, that is, is a particular class of whale exceptionally likely to run afoul of fishing gear, and if so, how might this knowledge be used to shape appropriate management actions?	**N/A**
E. 15	Review and identify the hypotheses to be tested in relation to impaired reproductive success.	**1**

Attachment 4

List of prioritized activites for 2003 based upon IBoF Implementation Plans relevant to recovery objectives identified within the National Recovery Strategy for iBoF Salmon Populations, 2002-2003

RECOVERY OBJECTIVES	IMPLEMENTATION PLANS and/or INSTRUMENT	ACTIONS	Locations	Proposed for '03
1) Harbour and Protect Residual Populations				
a. Protect existing wild salmon populations	a. Fisheries Act ; National Park Act	- Increase patrols	NS & NB	- DFO Parrsboro to maintain or increase time dependant on funding.
	b. Special Permits	- Increase consideration to *Endangered* status in permit reviews	NS and NB	
	c. Initiate Live Gene Banks	- Collect representative populations	3 rivers in NB, 7 in NS (Annex 2)	- Cont'd as capacity permits (three corner stone pops, BSR Stewiacke & Gaspereau); Realization of limited capacities
	d. Fish Passage	- Assessment	Gaspereau R.	- NSPI re-assessment
b. Protect salmon habitat in freshwater and in marine near-shore environments.	a. Fisheries Act; Canadian Environmental Assessment Act	Increased attention to habitat impacts	- Throughout impacted area	DFO, Parrsboro: logging &habitat offences Maintain/ increase (Minas Basin & NS Chignecto Bay)
c. Create and maintain live gene banks in: i)- biodiversity facilities	Redirect portions of hatchery functions to biodiversity facilities	- Captive production of broodfish and pedigree-based mating strategy	-Mact., Mersey, Coldbrook -Minto (DNRE)	- Cont'd (capacity largely capped) - LGB reached maturity level - no further work as facility has reached capacity
ii)-rivers	Select separate rivers/tributaries for potential assessment of fish products	- Release groups separately at various life stages according to "priority" matings	- BSR, Stew. Demoiselle, Petitcodiac	- Releases and rivers unchanged; numbers will vary by life stage

RECOVERY OBJECTIVES	IMPLEMENTATION PLANS and/or INSTRUMENT	ACTIONS	Locations	Proposed for '03
2) Inventorying the Freshwater Habitat				
a. Review survey information	Inventory survey data	None		
b. Update survey information	Collect new data.	Surveys initiated.	-Upper Salmon, Pt. Wolfe	There is potential for a HSP project on the Maccan - will be reviewed later in the year
c. Characterize rivers and streams in terms of salmon productive capabilities	Build geo-mathematical model to integrate survey data	Personnel hired and project initiated.	- Throughout iBoF	Existing data for 22 rivers was converted to GIS format; no additional rivers will be added due to termination of funding .
3) Identify and Evaluate Important Genetic Population Parameters				
a. Analyze temporal and spatial genetic variation for inbreeding depression/ further erosion of genetic diversity	- Genetic analysis using, micro-satellite DNA loci, mitochondria DNA loci, and Major Histo-compatibility Complex (MHC) DNA loci	- Re-analysis with DNA on hand, - Expand to historic tissue extracted from scales, - Develop/test statistical methods - Develop LGB genetic data-base	- DNA & scale sample archive.	- Working Paper for June 11-12 RAP.
b. Prioritize residual populations for preservation /restoration	- Genetic analysis using, micro-satellite DNA loci, mitochondria DNA loci,	- Expand to 10 loci of LGB DNA archive, determine: 1. families, 2. inbreeding potential 3. river differentiation - Collect samples from smolts and adults when encountered.	DNA and scale sample archives. BSR, Upper Salmon, Pt. Wolfe	- Working Paper for June 11-12 RAP.
4) Resolve Impediments to Recovery				
a. Assessment of potential threats i) Freshwater	Population modeling.	Propose and test models.	- BSR, Stew.	- Update for June RAP;

RECOVERY OBJECTIVES	IMPLEMENTATION PLANS and/or INSTRUMENT	ACTIONS	Locations	Proposed for '03
ii) Marine	>>>>>>>>>>>>>	DFO SALAR MAP; pelagic trawl for post smolts	+ 22 others w habitat data - BoF, GOM	- Pelagic trawl to be repeated per 2002; FFHR HSP acoustic tag detection trials
b. Research potential threats i) Freshwater	Determine population parameters and rates.	- Assess wild smolt production in BSR - Compare with historic production. - Assess adult return rate in BSR	BSR, Upper Salmon,	- To be cont'd with data inputs with decreased capacity - Continue smolt monitoring on BSR, USR & add Gaspereau; plans for Stewiacke cancelled due to lack of resources
ii) Marine	Determine marine habitat usage. Determine marine growth, diet, pathology, and associated environmental variables.	Assess downstream passage - Map migration routes using acoustic tags Assess detection rates of acoustic tags - Live capture post-smolts in Bay of Fundy.	Petitcodiac - BSR, USR, Stewiacke, Gaspereau, Nashw. Saint John - BoF	AMEC tracking of 30 BSR smolts at causeway FFHR HSP acoustic tag detection trials - Pelagic trawl survey June 2-20
c. Implement corrective measures i)Freshwater ii) Marine	Recover habitat. >>>>>>>>>>>>	- Assess potential to remove barrier. -Improve fish passage >>>>>>>>>>>>	Humphreys Bk. Gaspereau R. >>>>	- HSP River Keeper proposal not approved NSPI – to continue assessment of passage at Whiterocke >>>>>>>

RECOVERY OBJECTIVES	IMPLEMENTATION PLANS and/or INSTRUMENT	ACTIONS	Locations	Proposed for '03
5) Restoring the Pop'ns				
a. Design and implement re-introductions program	Distribute product from Live Gene Bank	- Evaluate re-introduction strategies through electrofishing and genetics	Prioritized re-intros to river of origin & warehouse well represented families products.	- maintain existing plan until Critical Habitat issue is resolved i.e., electro. & tissue sampl-ing to be cont'd
b. Develop captive breeding/ culture program in support of re-introductions programs	***Live Gene Banks:*** Chignecto and Minas groups, Gaspereau River stock	- Genotype broodstock - Design breeding program to minimize inbreeding and loss of genetic variation.	DFO Bio-diversity Facilities	- Continuing, pair-wise matings to be initiated within facility capacity; smolts to be evaluated for LGB program.
			USR/ FNP	- Capture smolts for potential captive rearing to adults at Mactaquac
6) Monitoring Progress				
a. Abundance surveys of representative populations in freshwater inc. methodology & criteria, individual populations to be monitored, responsible parties & required financial resources	- Smolt wheel/ traps	- Collect smolt data	- BSR (DFO), Upper Salmon (FNP) Gasp-ereau (NSPI)	- Continue, BSR, USR, Gaspereau; Stewiacke not funded
	- Electrofishing	- Collect juvenile data; sample juveniles	-BSR, Stew, & Gaspereaux + 9 NS index rivers & opportunistic	- DFO 9 rivers will be done in '03 - NSDAF to electroseine Minas Basin Rivers
	- Mark and recapture adult salmon by seine and/or dive counts.	- Count adult salmon sample/collect adult salmon tissue inc. milt.	- BSR, Upper Salmon, Gaspereau	- Continue
	- Release-stage family strategy trials		Salmon River (Truro)	- Capture of fry for pedigree identification; initiate tracking of families

RECOVERY OBJECTIVES	IMPLEMENTATION PLANS and/or INSTRUMENT	ACTIONS	Locations	Proposed for '03
b. Factors most likely limiting restoration	-Fish passage	Trials	Petitcodiac R	- AMEC downstream passage at Causeway with 30 acoustic tagged smolts
c. Effectiveness of recovery techniques	Electrofishing of juveniles; and count/ track smolts and adults.	- Determine parr/ smolt/ adult densities	Stewiacke, BSR Salmon R (Truro)	- Continue - capture of fry to trace successful spawners
7) Evaluating Success of Recovery				
a. Development of stock assessment methods/ criteria to assess self-sustainability	Modeling /electrofishing/genetics	- Population abundance - Prognosis - Genetic status	Principle rivers & throughout iBoF s	- GIS work not resourced in 2003; index-based assessment to be tabled at June RAP
b. Positioning for stock status report in 2010	Status reports	- Publish 1999 report - Update report for 2002	Throughout iBoF	- Both to be completed – June RAP to form basis of 2002 stock status Res. Doc..
8) Involving all Parties				
a. Effective organization and management process involving all interested parties	Re-vamp organization structure	- Initiate Implementation Team (Planning Group) & spring// fall review agendas for RT	Throughout iBoF	- PG met March 18-19 and Apr 29; RT met April 30 & is scheduled for Sept 30.
b. Dialogue with American counterparts	Meetings and conferences	- Co-ordination - Sharing ideas	Throughout iBoF	- US collaboration on BoF pelagic trawl - 5 Paper / Posters to be presented at AFS conference in Quebec City , August, 2003
c. Education of general public	• Various media • Personal	- Posters - Presentations	iBoF salmon, LGB's etc.	Cont./ augment. - HSP BoF Biosphere initiative, - C&P Parrsboro to take education package to schools
d. Communications network	Appoint communication officer (Carl Myers)	- Proactive approach	BIO	Cont./ augment; Carl Myers DFO to lead

iBoF Salmon Monitoring and Research Progress Report to November 2003

J. Gibson and P. Amiro

Progress to November 2003

- iBoF RAP held June 2003
- Proceedings Report pending
- Research Documents produced
  - Stewiacke River population 1965 to 2001
  - Big Salmon River population 1965 to 2002
  - Stocking to iBoF Rivers 1900 to 2002
  - Data for iBoF Rivers historic summary(electrofishing and recreational catch)

Progress to November 2003...

- Poster at American Fisheries Society and at DFO National Science Workshop
  - **Population description, status, and monitoring of the recovery actions for *endangered* inner Bay of Fundy Atlantic salmon (*Salmo salar*)**
- Big salmon river smolts and adults
- Tagging trials (FFFN, DFO)
- Contribution to Fisheries article on endangered salmon in Canada

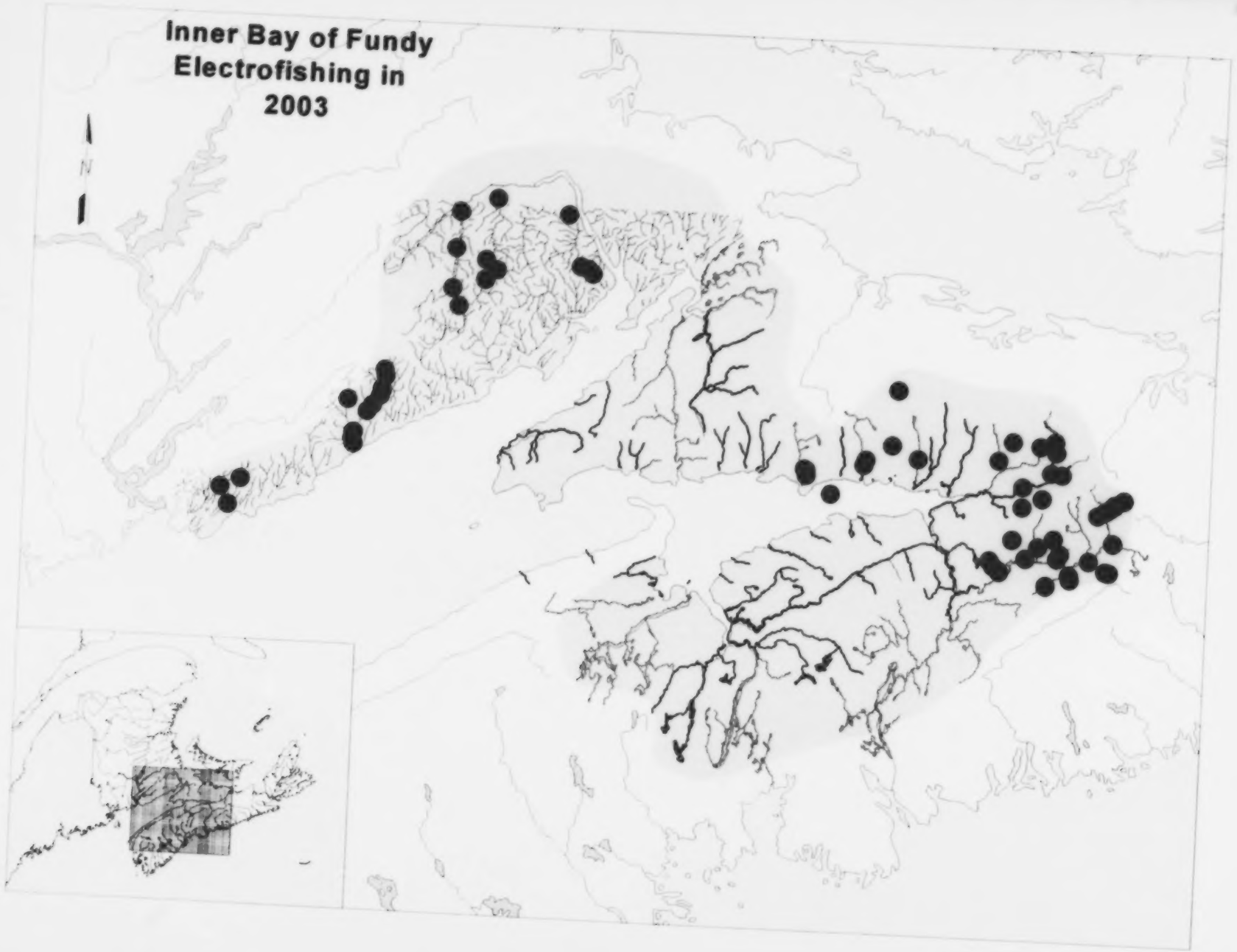
Critical habitat

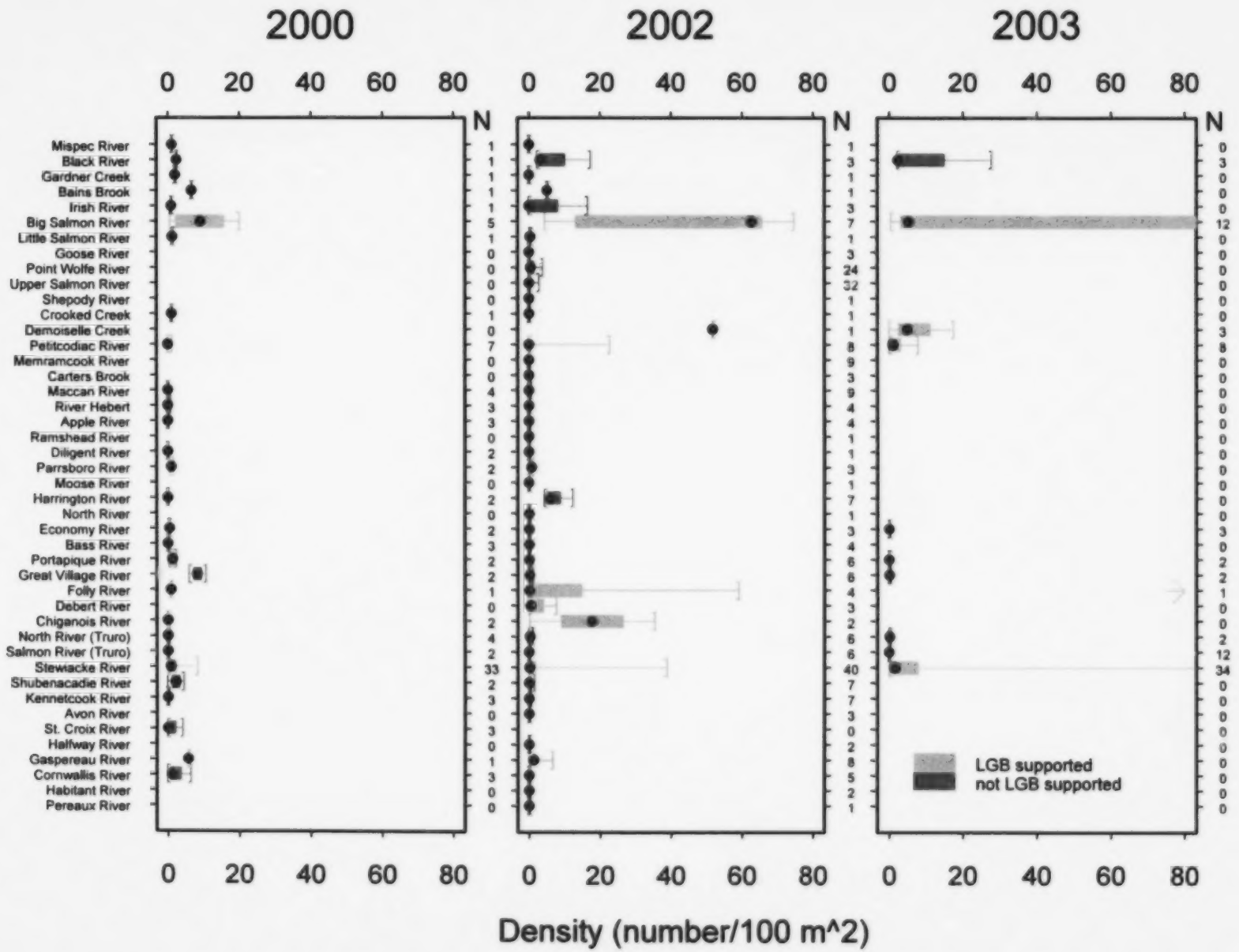
- Research document progressing from December 2003 progressing.
- Critical habitat modeling funded in 2004 and project initiated November 14.
- Results will contribute to the development of a threats analysis model for iBoF salmon

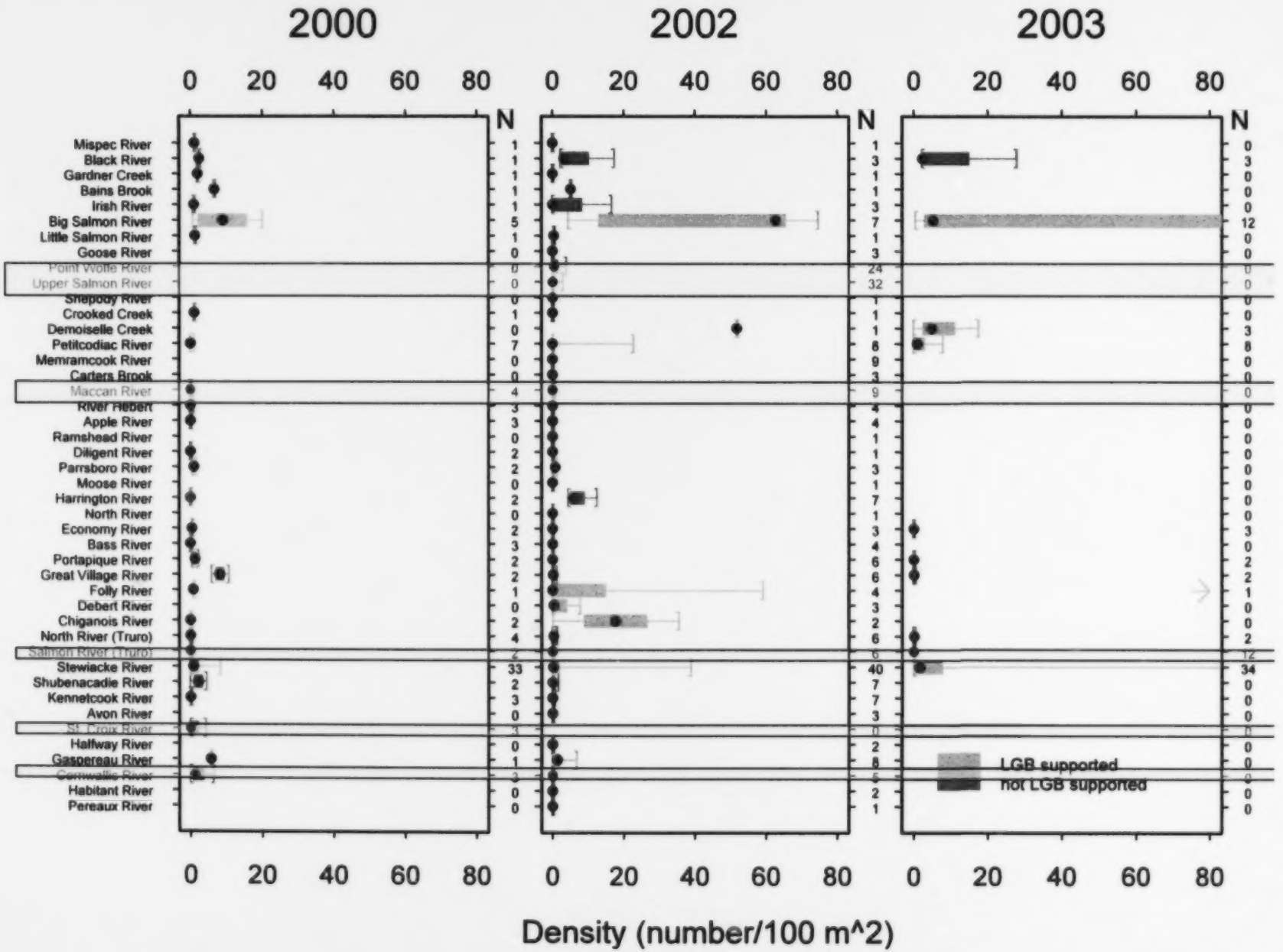
New initiatives from new $

- Additional funds from SARA to be used to develop scale pattern analysis to detect migration pattern shifts.
- Employee started November 3.

Monitoring 2003
Electrofishing

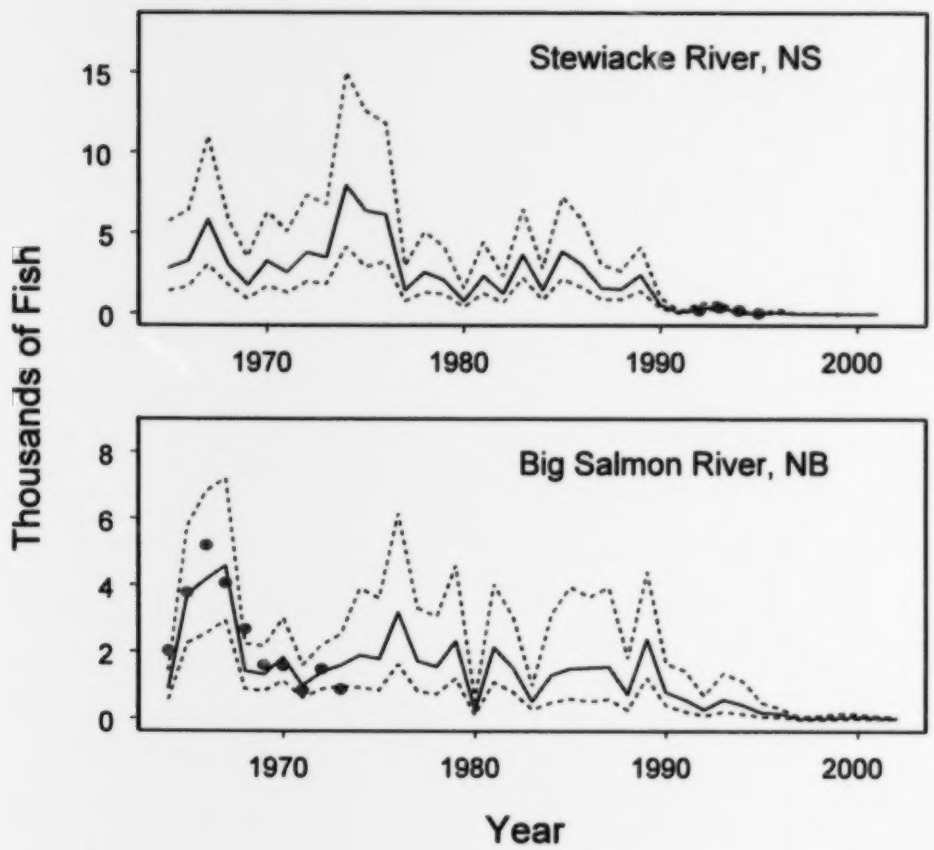

Inner Bay of Fundy
Electrofishing in
2003
N

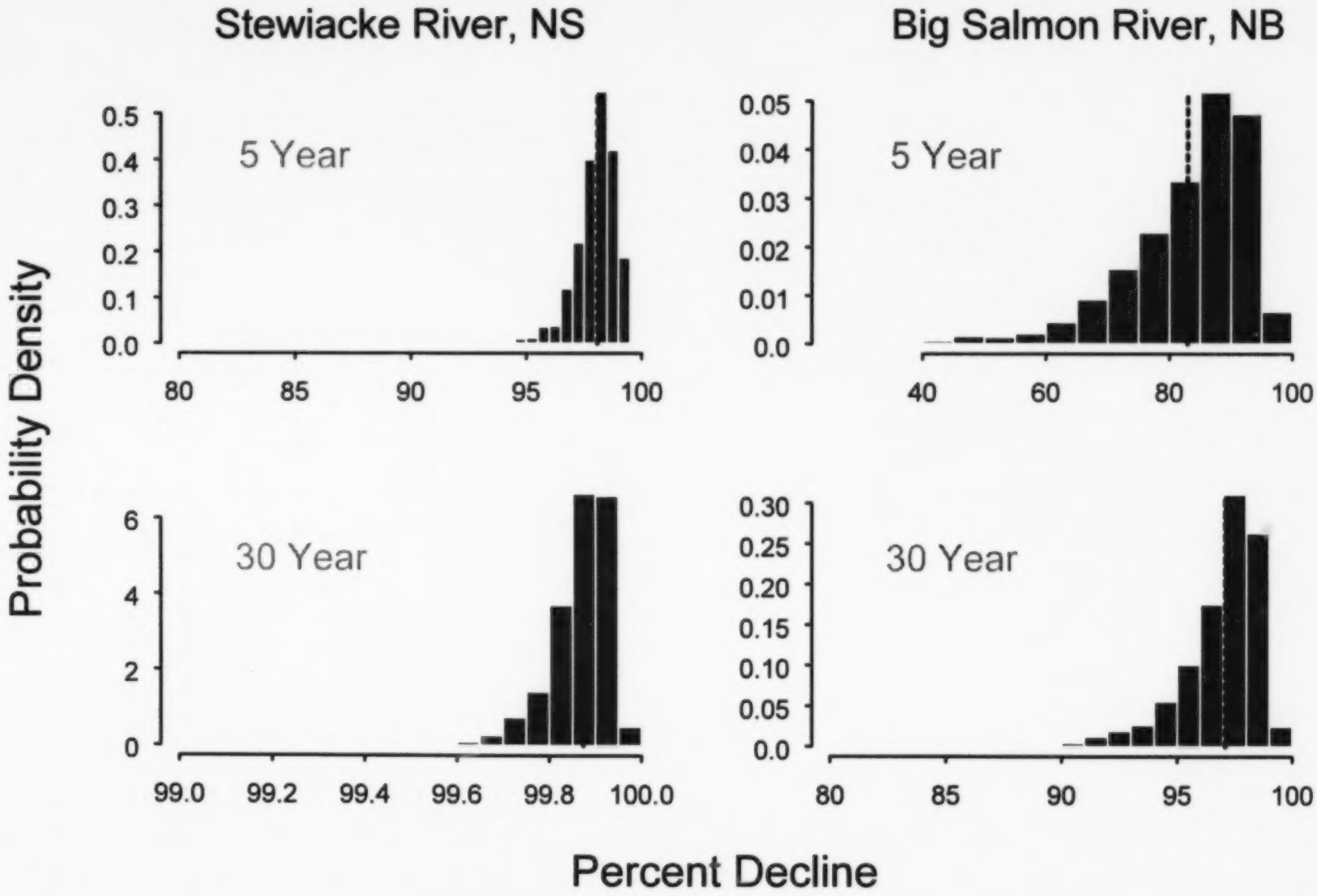

2000
2002
2003
0
20
40
60
80
N
Mispec River
Black River
Gardner Creek
Bains Brook
Irish River
Big Salmon River
Little Salmon River
Goose River
Point Wolfe River
Upper Salmon River
Shepody River
Crooked Creek
Demoiselle Creek
Petitcodiac River
Memramcook River
Carters Brook
Maccan River
River Hebert
Apple River
Ramshead River
Diligent River
Parrsboro River
Moose River
Harrington River
North River
Economy River
Bass River
Portapique River
Great Village River
Folly River
Debert River
Chiganois River
North River (Truro)
Salmon River (Truro)
Stewiacke River
Shubenacadie River
Kennetcook River
Avon River
St. Croix River
Halfway River
Gaspereau River
Cornwallis River
Habitant River
Pereaux River
LGB supported
not LGB supported
Density (number/100 m^2)


2000
2002
2003
0 20 40 60 80
N
Mispec River
Black River
Gardner Creek
Bains Brook
Irish River
Big Salmon River
Little Salmon River
Goose River
Point Wolfe River
Upper Salmon River
Shepody River
Crooked Creek
Demoiselle Creek
Petitcodiac River
Memramcook River
Carters Brook
Maccan River
River Hebert
Apple River
Ramshead River
Diligent River
Parrsboro River
Moose River
Harrington River
North River
Economy River
Bass River
Portapique River
Great Village River
Folly River
Debert River
Chiganois River
North River (Truro)
Salmon River (Truro)
Stewiacke River
Shubenacadie River
Kennetcook River
Avon River
St. Croix River
Halfway River
Gaspereau River
Cornwallis River
Habitant River
Pereaux River
LGB supported
not LGB supported
Density (number/100 m^2)

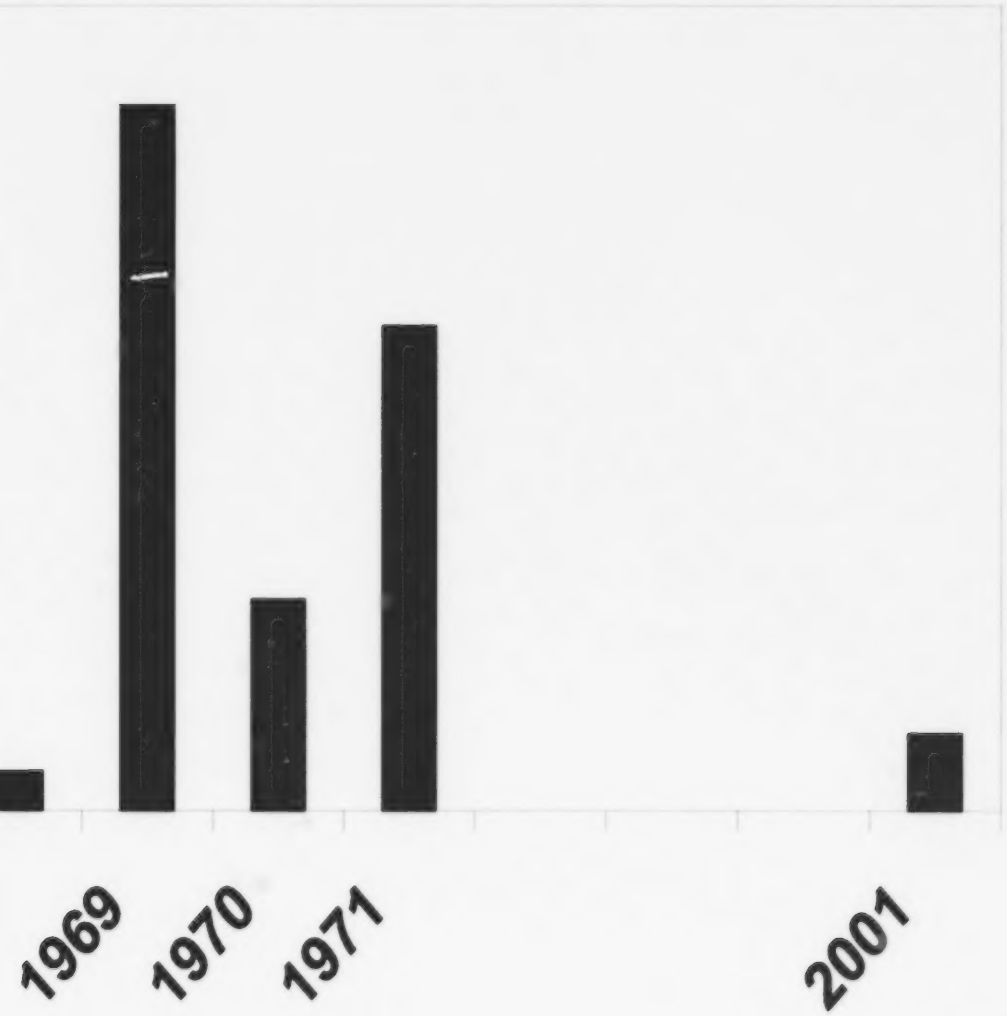
Population description, status, and monitoring of the recovery actions for *endangered* inner Bay of Fundy Atlantic salmon (*Salmo salar*)

- Population trajectories for two index rivers Stewicake and Big Salmon River.
- Percent declines for 5 and 30 year histories.
- Juvenile salmon distributions and densities.
- Smolt to adult return to BSR in 2001-2002
- Population dynamics.


Stewiacke River, NS
15
10
5
0
1970
1980
1990
2000
Big Salmon River, NB
8
6
4
2
0
1970
1980
1990
2000
Thousands of Fish
Year


Stewiacke River, NS
Big Salmon River, NB
5 Year
5 Year
30 Year
30 Year
Probability Density
Percent Decline
0.5
0.4
0.3
0.2
0.1
0.0
80
85
90
95
100
0.05
0.04
0.03
0.02
0.01
0.0
40
60
80
100
6
4
2
0
99.0
99.2
99.4
99.6
99.8
100.0
0.30
0.25
0.20
0.15
0.10
0.05
0.0
80
85
90
95
100

Percent return to river
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1966
1967
1968
1969
1970
Sm


1969
1970
1971
2001
Smolt year

Population dynamics

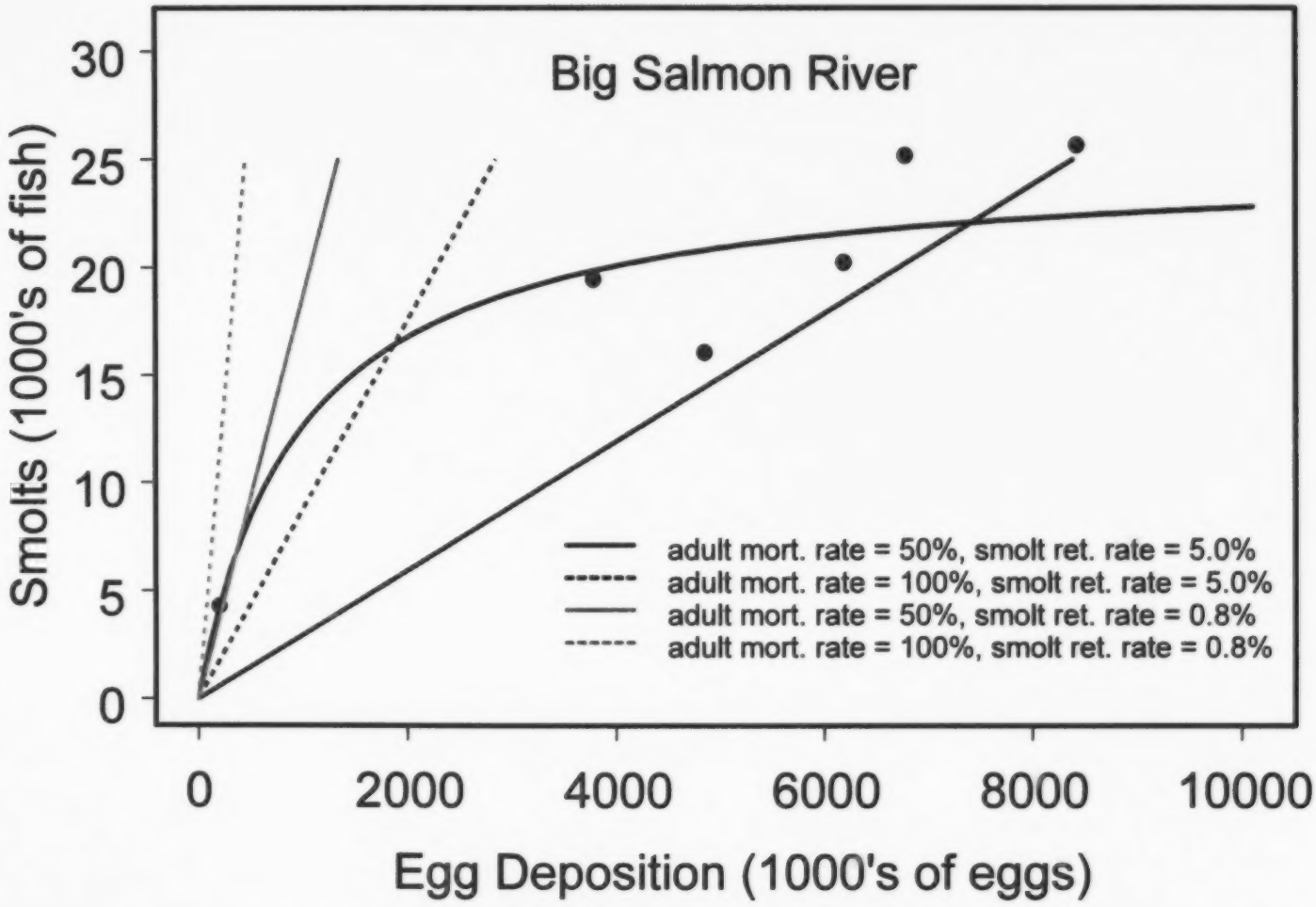
- Return rates (smolt to adult survival) averaged 5.0% for the years 1966 to 1971 smolt year classes. The return rate for the 2001 smolt year class was 0.84%.
- Survival of adult BSR salmon averaged 0.494 from 1968 to 1972. Now observed to be negligible.

Population dynamics...

- On average 92.6% of BSR salmon mature after one year at sea.
- Eggs pre recruit was 2,282 and lifetime is 6,713.
- Maximum smolt production is estimated at 25.4 per 1,000 eggs and a maximum of 25,012 smolts.

Equilibrium populations

Scenario	Post Spawning Adult Annual Mortality (%)	Smolt to Adult Return Rate (%)	Equilibrium Population Size (Number of adults)
1966 - 1972	50	4.9	2471
Present	100	0.8	0
Alternative	100	4.9	819
Alternative	50	0.8	142


Big Salmon River
Smolts (1000's of fish)
30
25
20
15
10
5
0
0
2000
4000
6000
8000
10000
Egg Deposition (1000's of eggs)
adult mort. rate = 50%, smolt ret. rate = 5.0%
adult mort. rate = 100%, smolt ret. rate = 5.0%
adult mort. rate = 50%, smolt ret. rate = 0.8%
adult mort. rate = 100%, smolt ret. rate = 0.8%

Mactaquac Live Gene Bank Stock on Hand, November 2003 (Breeding Program)

Origin of Stock	Year of Entry	# of Fish	Type	Stage Collected/Selected	Current Stage	Year of Spawning
BSR	1998	6	wild	parr	adult	2000, 2001, 2002, 2003
BSR	1999	71	wild	parr	adult	2001, 2002, 2003, 2004
BSR	2000	215	wild	parr	adult	2002, 2003, 2004, ?
BSR	2001	289	wild	parr	adult	2003, 2004, 2005, ?
BSR	2001	161	F1	parr	adult	2003, 2004, 2005, ?
Black R.	2001	142	wild	parr	adult	2003, 2004, 2005, ?
BSR	2002	377	"wild" [1]	parr	post smolt	2004, 2005, 2006, ?
BSR	2002	385	F1	parr	post smolt	2004, 2005, 2006, ?
BSR	2003	208	"wild" [1]	smolt [2]	post smolt	2004, 2005, 2006, ?
USR	2003	96	wild	smolt [2]	post smolt	2004, 2005, 2006, ?
BSR	2003	440	"wild" [1]	parr	parr	2005, 2006, 2007, ?
BSR	2003	2500	F1	parr	parr	2005, 2006, 2007, ?
	Total	**4890**				

Live Progeny on Hand, November 2003 (For Future Release)

Stage	Number	Year of Release
eggs [3]	1.1 million	2004, 2005, 2008...
pre-smolt	21000	2004
F1 "grilse"	200 [4]	2004

[1] includes some F1's stocked as unfed fry

[2] collected from rotary screw trap (smolt wheel)

[3] projected

[4] projected # of surplus F1's included in BSR 2002 F1's above

Mactaquac Live Gene Bank Distributions

*All fish listed below were of BSR stock origin except Black R and USR, which are river of origin

Distributed to:	Year	Unfed Fry	Fall parr (0+)	Spring parr (1+)	1yr smolt	"pre-grilse"	grilse	"MSW" Spawners
Big Salmon R.	2001	185523	77718					
	2002	138682	34062		19725			
	2003	296818	54000	21025	13647			Female 15[2]
	2004[1]	375000	60000		20000			Female 15[2]
Petitcodiac R.								
Pollet R.	2002	56159						
	2003							
	2004[1]							
Little R.	2002							53
	2003					549[3]		
Demoiselle	2001	16222						
	2002	10080		1078				
	2003							
Point Wolfe R.	2003						286[4]	
Black River	2004[1]	70000						
Other								
Minto Hatchery	2001	30000	F1 1000					
	2002		F1 1000					
	2003		F1 1000					
	2004[1]		F1 1000					
to be determined	2004[1]	250000					200[4]	
Total	2001	231745	78718					
	2002	204921	35062	1078	19725			53
	2003	296818	55000	21025	13647	549[3]	286[4]	Female 15[2]
	2004[1]	695000	60000		20000		200[4]	Female 15[2]

[1] projected

[2] These 15 females to be priority-selected from wild LGB fish to provide additional females for marine-surviving males.

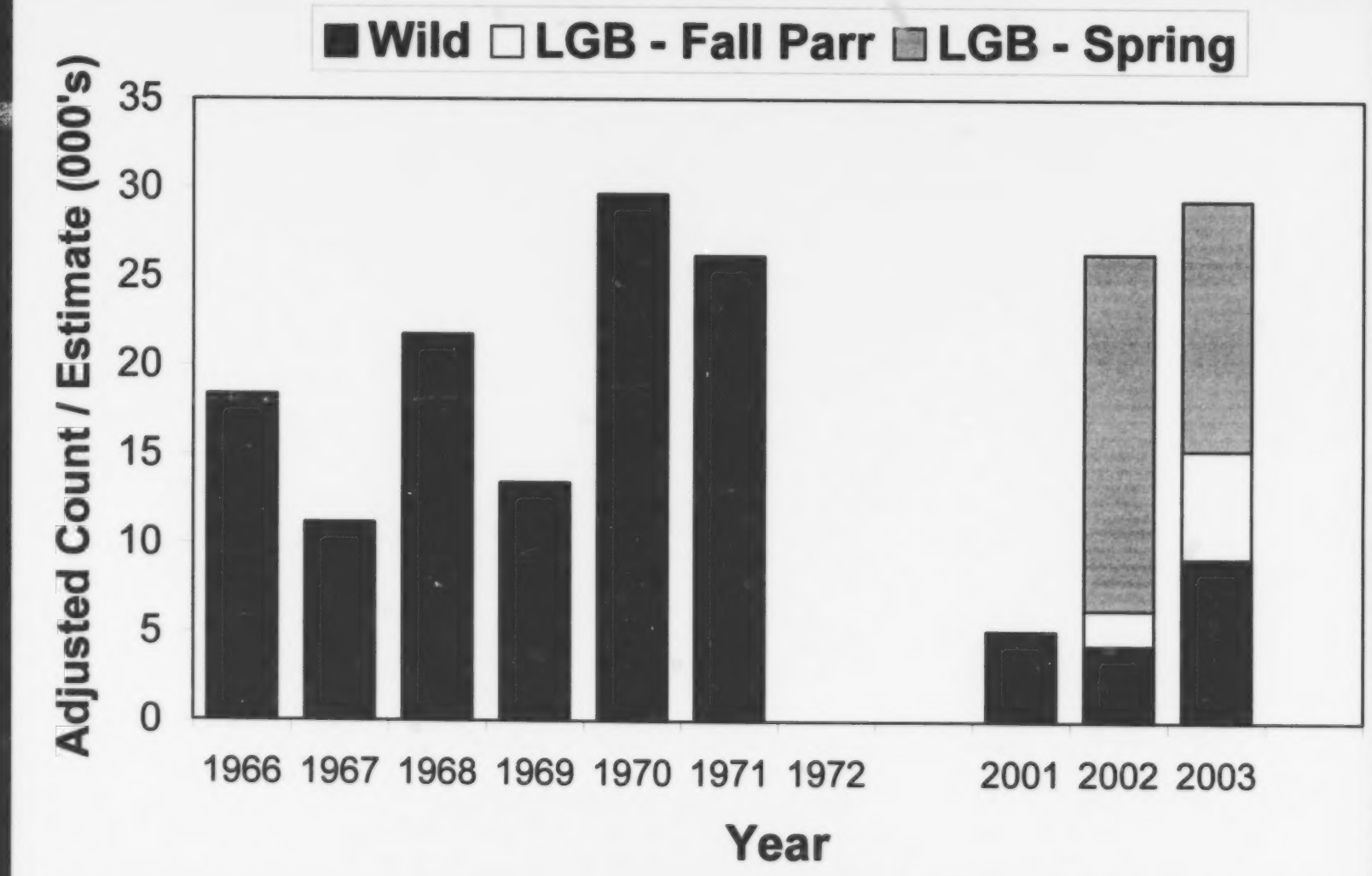
[3] released in May as 0.5-1.0 kg "pre-grilse"

[4] released in October, as 2-3 kg grilse

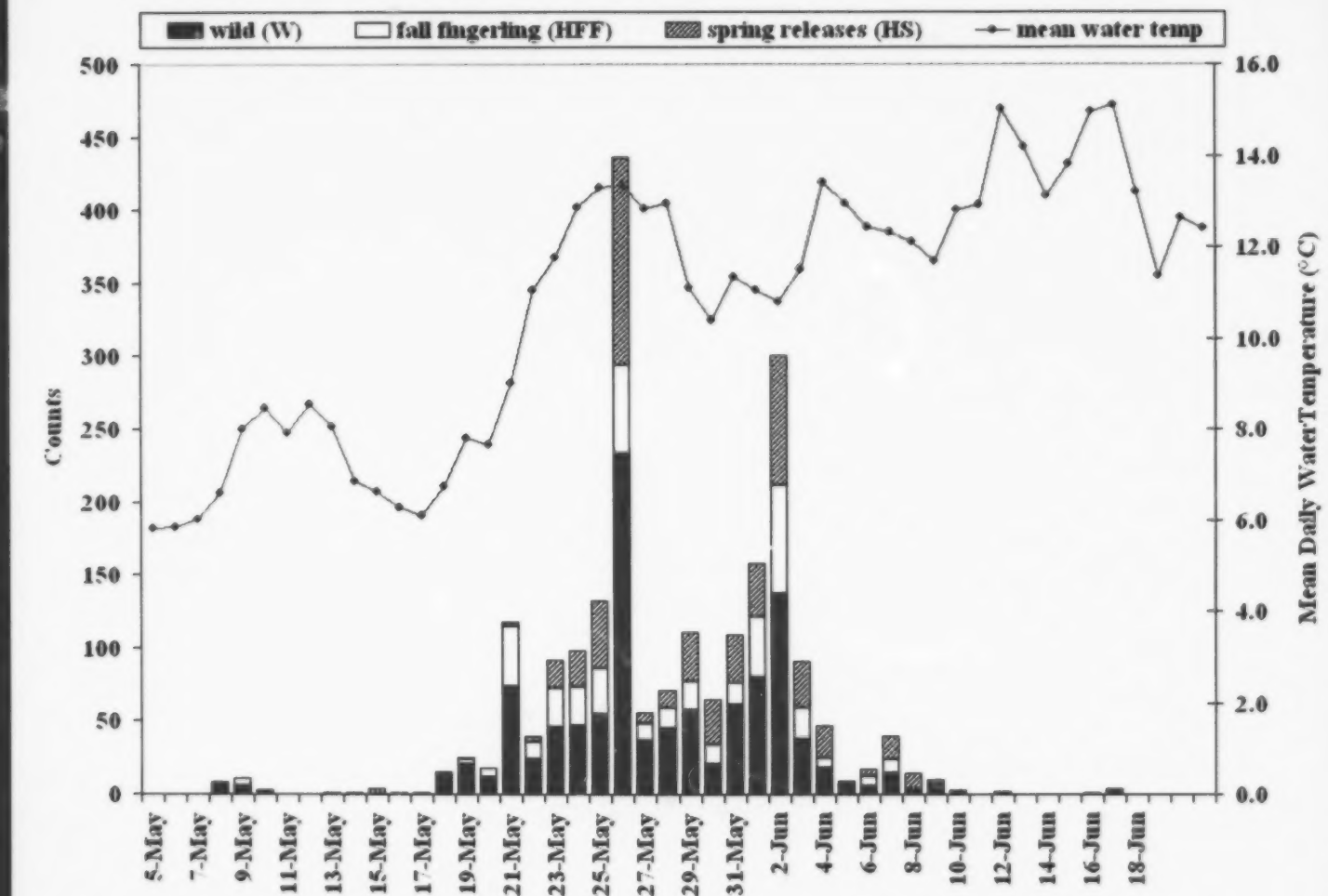
Big Salmon R. - Smolt Assessment - 2003

- Mark/Recap Exp. to estimate the smolt output and collect smolt for LGB
- Smolt wheel operated from May 6 to June 14th
  - 1071 non-adipose clipped smolts captured.
    - wild or LGB unfed fry stocked in 2001
  - 458 fall fingerling stocked (a/c) LGB smolts.
    - fall fingerling stocked in 2001 and 2002
    - 80% stocked as fall fingerling in 2002
  - 582 spring stocked (a/c) LGB smolts
    - stocked in 2003
- Total Smolt output or Population Estimates were;
  - Non A/c - 9,200 (95%CL's 7,725-11,325)
  - A/c (FF) - 6,100 (95%CL's 4,620-9,060)

Big Salmon Smolt Estimates

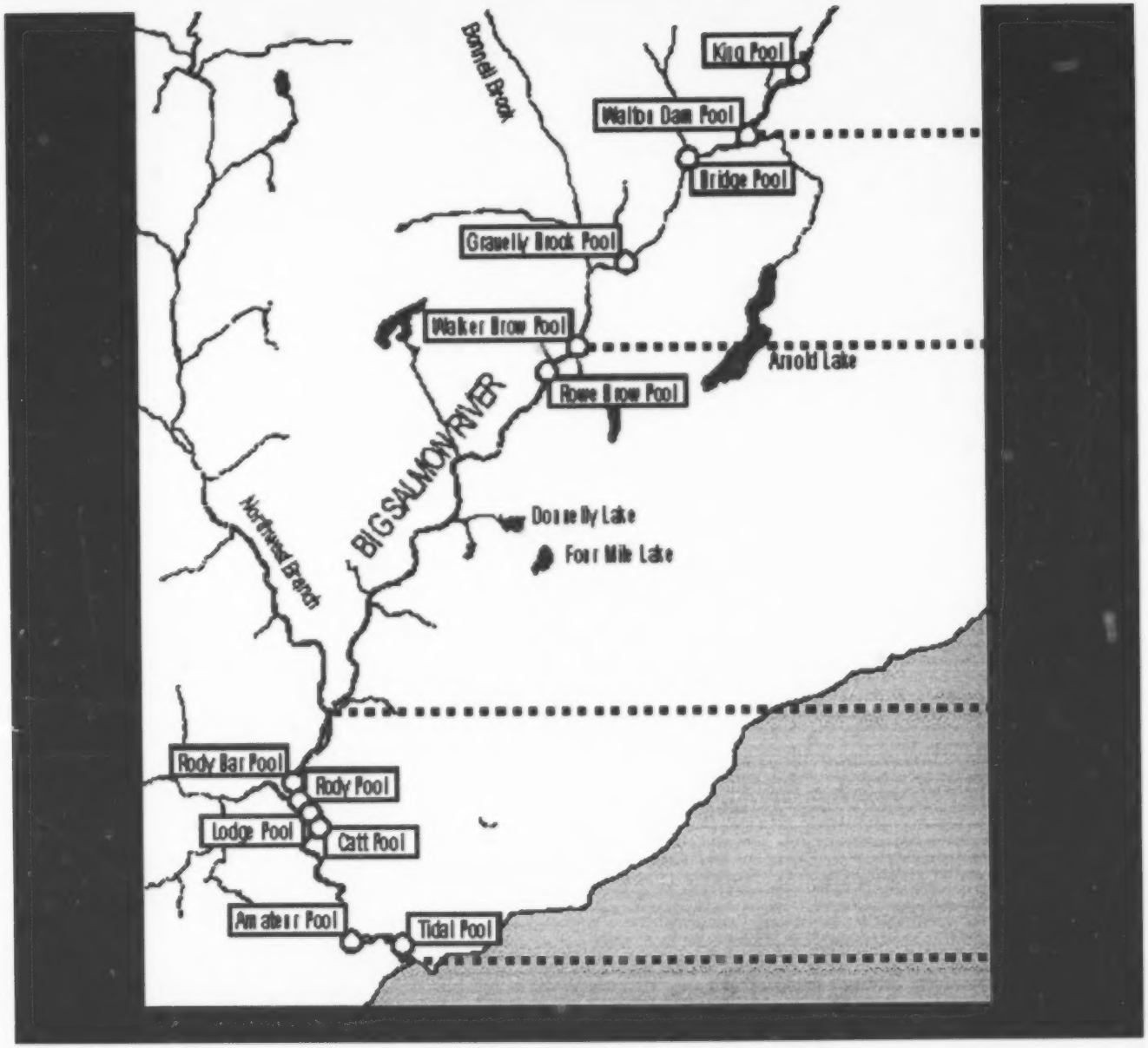


Smolt Run Timing - 2003



Big Salmon R. - Adult Assessments - 2003

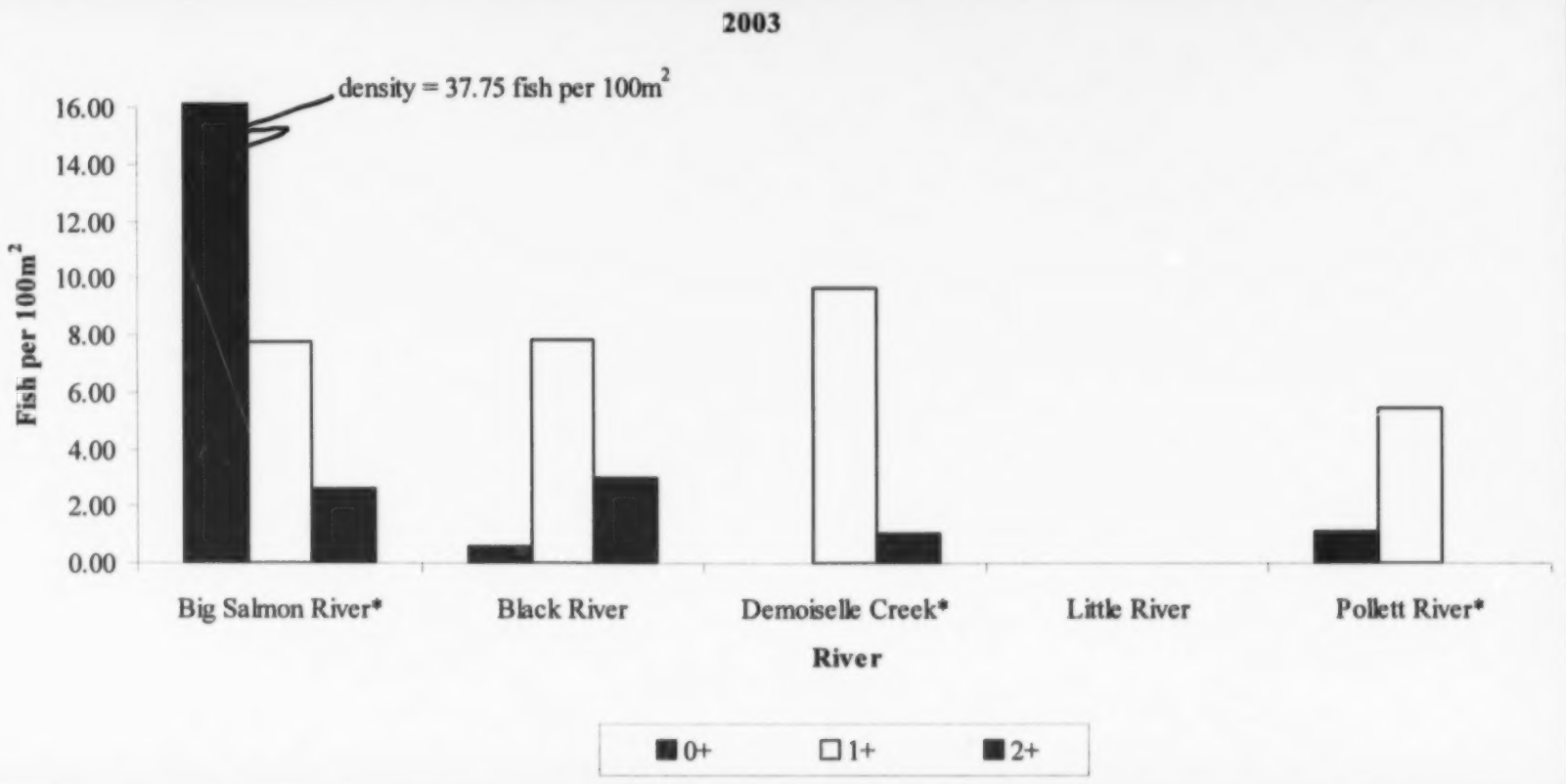
- Method used estimate returns was Mark/Recap
- July 29/30th, SNORKEL of LOWER/UPPER sections
  - observed 1 large salmon and 9 small salmon (grilse)
- Sept. 8/9th SNORKEL and seine/mark/sample
  - observed 1 large salmon and 14 small salmon
  - marked/sampled 1 large salmon and 6 small salmon
- Oct. 2nd - SNORKEL (lower/middle/upper sections)
  - observed 12 fish in total
  - observed 4 of 7 marked fish
- POPULATION ESTIMATE (2003)
  - 21 fish (95%CL 13-112)
    - 3 large and 18 small (15 wild and 3 a/c)


Bonnell Brook
King Pool
Walton Dam Pool
Bridge Pool
Gravelly Brook Pool
Walker Brow Pool
Rowe Brow Pool
Arnold Lake
BIG SALMON RIVER
Northwest Branch
Dorothy Lake
Four Mile Lake
Rody Bar Pool
Rody Pool
Lodge Pool
Catt Pool
Amateur Pool
Tidal Pool

Electrofishing Surveys - 2003

- **Rivers surveyed in 2003**
  - Big Salmon River
    - 12 sites
  - Black River
    - 3 sites
  - Demoiselle Creek
    - 3 sites
  - Pollett River
    - 4 sites
  - Little River
    - 4 sites

Electrofishing Results - 2003



Program Assistance provided by:

- Jason Flanagan - lead the field activities
- Fort Folly First Nation
- Fundy National Park
- Woodstock First Nation
- NB Dept. Natural Resources
- Atlantic Salmon Federation
- Fundy Trail Authority

- Some funding assistance was received from the Interdepartmental Recovery Fund (IRF)

COLLEGE OF ARTS

DISTRIBUTION OF EFFORT

According to Faculty Policies, every faculty member will negotiate with their chair/director the distribution of effort which the faculty member will be judged for the upcoming two-year TAPSI review. A normal distribution of effort is 40% teaching, 40% research, 20% service: no category can have less than 20%.

I, _____, agree that for the period 2006-07 my TAPSI
(please print) distribution of effort will be:

_____ % teaching (including anticipated teaching responsibilities:

_____ % research (including, eg. Writing articles, applying for grants:

_____ % service (includes:

On study leave: F _____ W _____ S _____

Faculty signature:_____ date: _____

Chair/director signature:_____ date: _____

Any other comments:

Attachment 4

Field Testing of Telemetry Equipment
In the Bay of Fundy

Methodology

The equipment used by Fort Folly Habitat Recovery Program for tracking salmon were: VR 2 receivers, V16 and V8 transmitters and a VR60 active tracker. All equipment is made by Vemco Ltd from Shad Bay Nova Scotia.
The procedure for testing the equipment was to deploy two receivers from an anchor and buoy system. One receiver is attached to the anchor rope some 5 meters from the bottom with a float attached 1 meter above the receiver to ensure that the receiver does not lay on the bottom, the second receiver was attached to the anchor rope some 20 meters from the surface. A series of receivers are then deployed at 500 meter increments from 0 to 2000 meters. Once the receivers were deployed, the transmitters were monitored using the VR60 active tracker at 100 meter increments to ensure that the transmitters were emitting a signal. The transmitters were lowered over the side of the boat to a depth of 5 meters, the engine and all of the boats equipment except for the radio were shut off to minimize any electronic interference.
Once the full 2000 meter distance had been travelled, the receivers were downloaded. The data from the receivers show at what distance the receivers no longer detect any signal. This allows the maximum distance that an array of receiver should be deployed in order to have complete coverage of an area.

Testing Areas

Testing of the telemetry equipment took place in three areas of the bay of Fundy. The first testing was near the Wolves Archipelago, during testing the large V16 transmitter was broken and this combined with the lack of boat time was the reason for not testing near Quacco Head. Data from this area has shown that the V16 transmitter has a range of 800 meters and the V8 transmitter about half at 400 meters. This translates into the maximum distance to deploy receivers is 1600 meters for the V16 transmitter and 800 meters for the V8 transmitter. It should also be noted that bottom deployment of the receivers is preferable as the top deployment shows evidence of background noise and does not show very good detection of the transmitters. The graphical analysis depicts this much better.
The second set of testing took place at Isle Haute and within Minas Basin. The same methodology was used for the deployment and the transmitters. The data from these areas shows that in the Minas Basin the maximum distance that good decodes were detected was 200 meters and off Isle Haute 300 meters. The maximum distance that an array should be deployed within the minas Basin would be some 400 meters apart and off Isle Haute 600 meters.
Some freshwater testing was also performed at Palmer's Pond in Dorchester, NB. Only on receiver was deployed some 6 meters below the surface complete with a float to ensure that the receiver did not lay on the bottom. To mimic the conditions that the transmitters would be used both the V16 and V8 transmitters were placed in dead trout. The V16 performed well but the V8 transmitter was not detected even at 5 meters away from the receiver. The data for the freshwater test show the maximum distance for deployment should not exceed 80 meters.

Downstream salmon smolts counts

Year	2002	2003
Bypass 1	198 (12.6%)	1184 (73.3%)
Bypass 2	332 (21.1%)	95 (5.9%)
Bypass 3	1043 (66.3%)	337 (20.9%)
Total Released	Approx 1500	Approx 1500
Lanes Mills (500)	172 (34.4%)	235 (47.0%)
Deep Brook (500)	198 (39.6%)	119 (23.8%)
Canal (500)	236 (47.2%)	75 (15.0%)
Total tagged smolts recovered	606 out of 1500 = 40.4%	429 out of 1500 = 28.6%
Total wild smolts	219	172

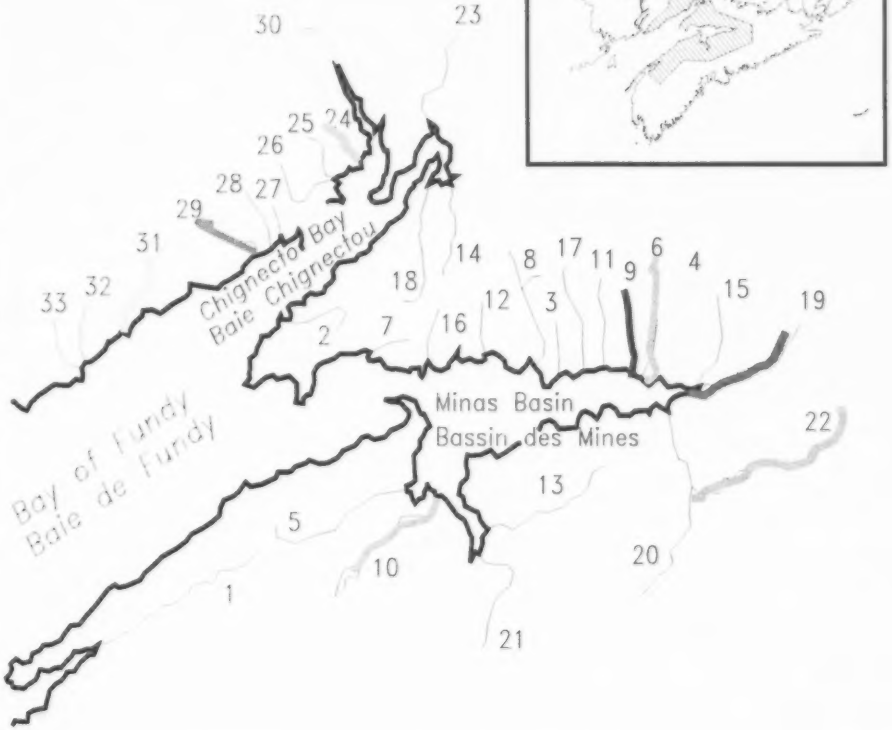
Current and Future Plans....

Current Plans:

- Visual surveys in Fall 2003
  - Salmon activity
  - Habitat

Future Plans:

- HSP 2004/2005
  - Habitat restoration
  - Habitat enhancement
  - Outreach
  - Continued monitoring
- Electrofishing?



River Index
Index des rivières

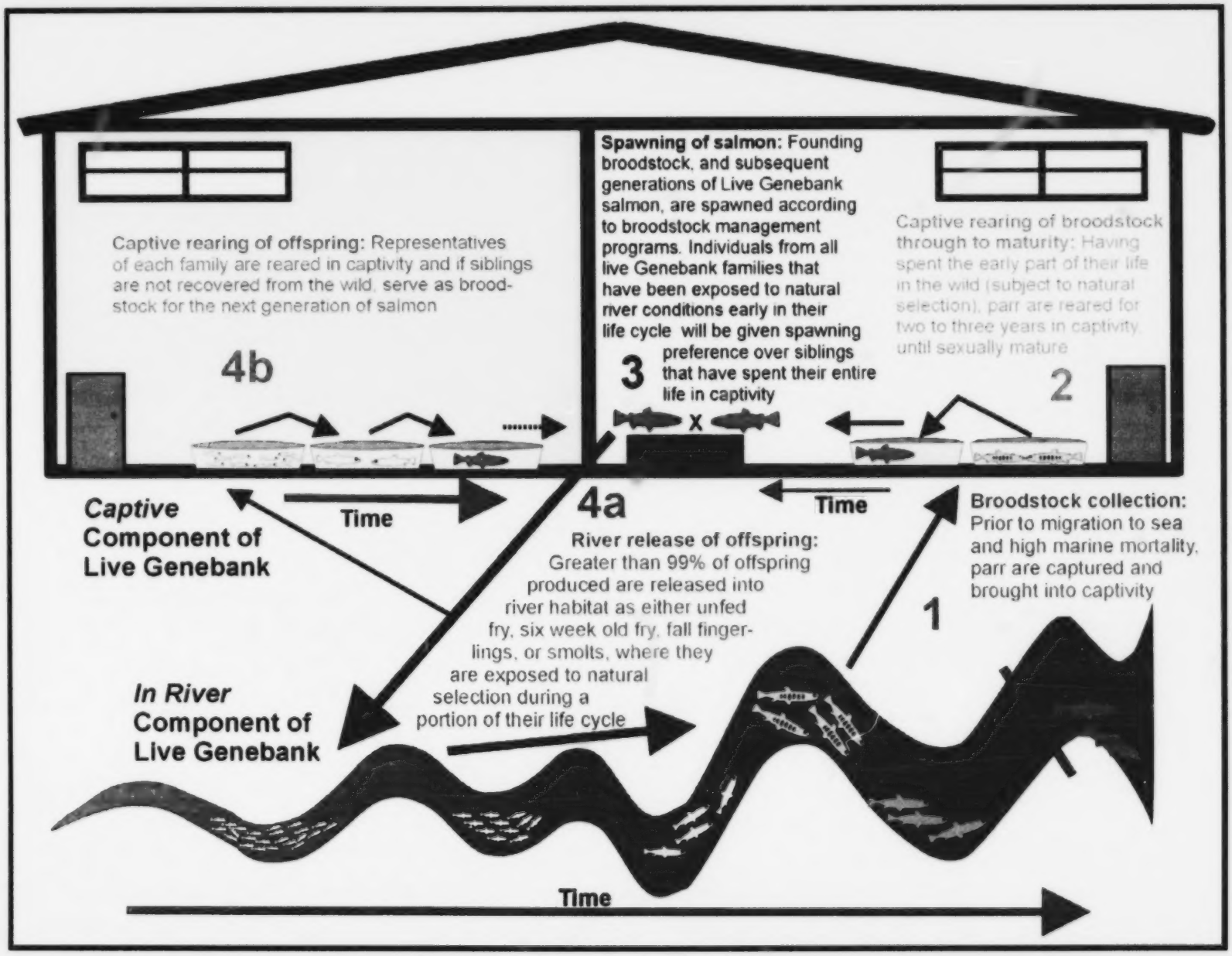
1 Annapolis
2 Apple
3 Bass, Colchester
4 Chiganois
5 Cornwallis
6 Debert
7 Diligent
8 Economy
9 Folly
10 Gaspereau, Kings
11 Great Village
12 Harrington
13 Kennetcook
14 Maccan
15 North, Colchester
16 Parrsboro
17 Portapique
18 Rivière Hébert
19 Salmon, Colchester
20 Shubenacadie
21 St. Croix, Hants
22 Stewiacke
23 Tantramar
24 Demoiselle
25 Crooked
26 Shepody
27 West, Albert
28 Upper Salmon, Alma
29 Point Wolfe
30 Petitcodiac/Pollett
31 Big Salmon
32 Irish
33 Mosher

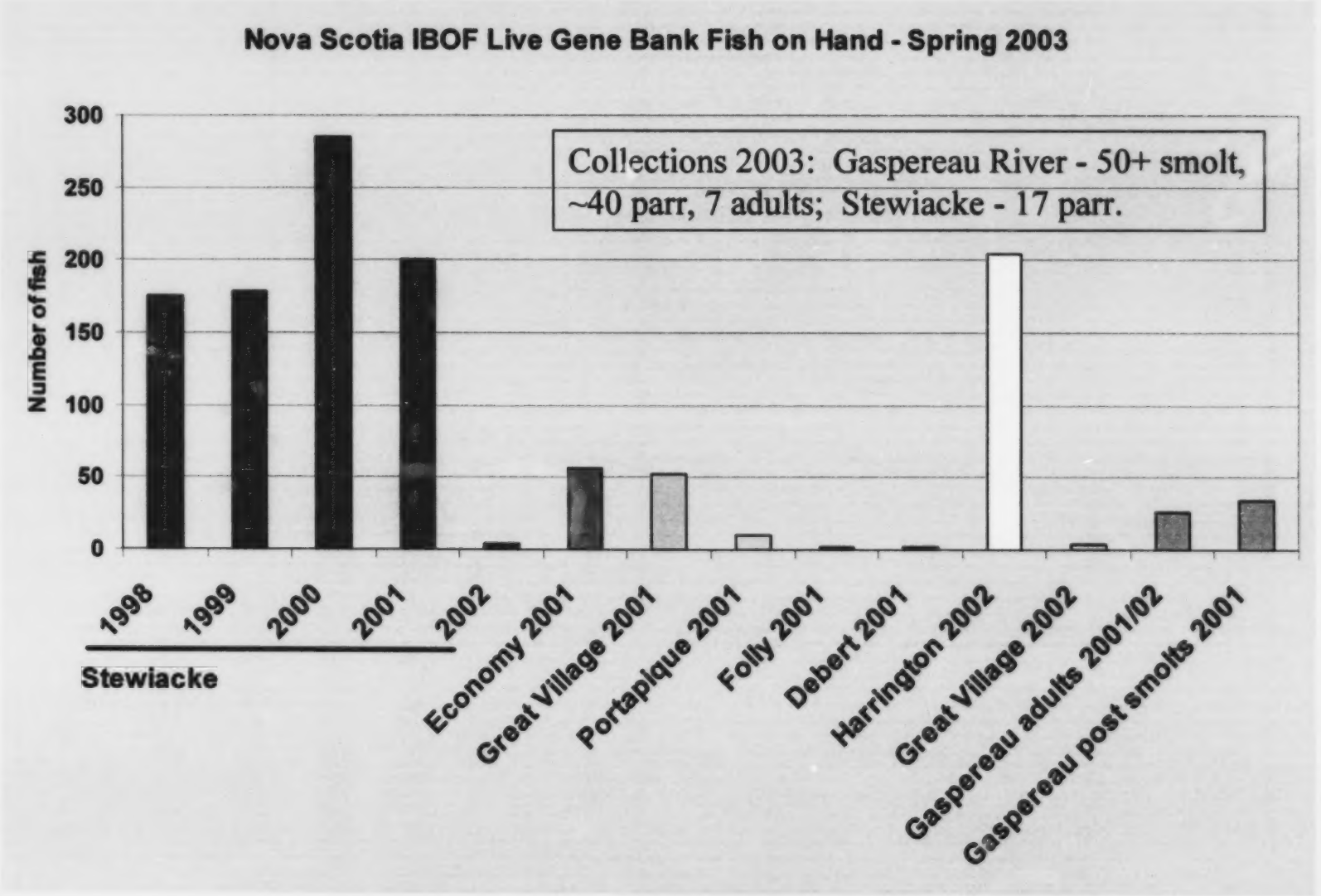
Inner Bay of Fundy Atlantic Salmon Live Gene Bank for Nova Scotia and New Brunswick Stocks

- Recovery / maintenance plan includes:
- Growth of fish in captivity for release to supplement any natural production
- Mating of fish according to a prescribed mating plan to protect the genetics of the IBOF stocks as much as possible

Collection, marking and tissue sampling of juveniles

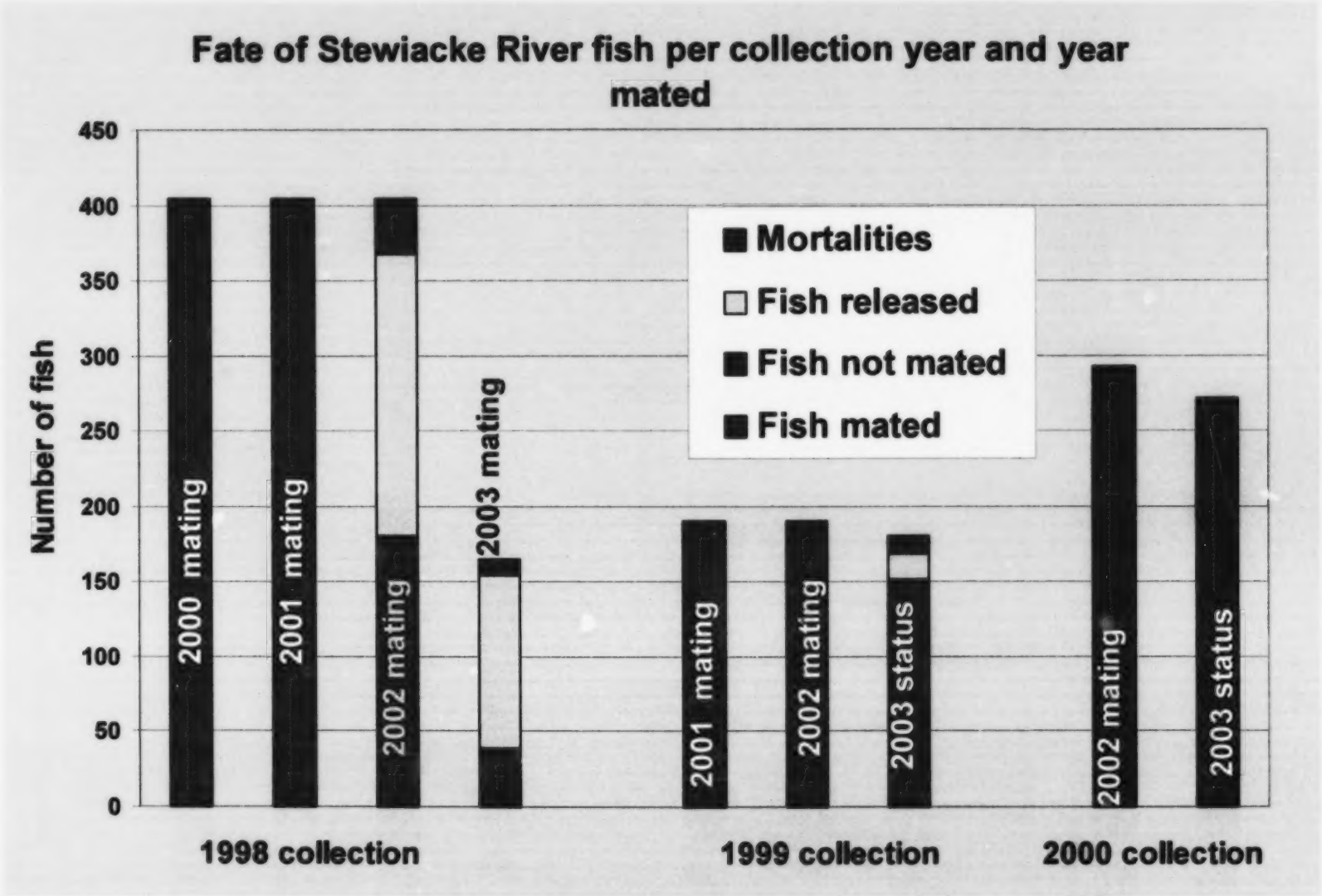
- Wild Inner Bay of Fundy parr were collected annually, 1998 to 2002, mostly on the Stewiacke River, but elsewhere in 2001-2002; F1's in 2003
- Parr were collected from the Gaspereau River in 2001 and 2003 to contribute to mating plan
- Fish were pit tagged upon reaching adequate size and tissue sampled


Captive rearing of offspring: Representatives of each family are reared in captivity and if siblings are not recovered from the wild, serve as brood-stock for the next generation of salmon
4b
Spawning of salmon: Founding broodstock, and subsequent generations of Live Genebank salmon, are spawned according to broodstock management programs. Individuals from all live Genebank families that have been exposed to natural river conditions early in their life cycle will be given spawning preference over siblings that have spent their entire life in captivity
3
Captive rearing of broodstock through to maturity: Having spent the early part of their life in the wild (subject to natural selection), parr are reared for two to three years in captivity until sexually mature
2
Captive Component of Live Genebank
Time
4a
Time
River release of offspring: Greater than 99% of offspring produced are released into river habitat as either unfed fry, six week old fry, fall finger-lings, or smolts, where they are exposed to natural selection during a portion of their life cycle
Broodstock collection: Prior to migration to sea and high marine mortality, parr are captured and brought into captivity
1
In River Component of Live Genebank
Time


Nova Scotia IBOF Live Gene Bank Fish on Hand - Spring 2003
Collections 2003: Gaspereau River - 50+ smolt, ~40 parr, 7 adults; Stewiacke - 17 parr.
Number of fish
300
250
200
150
100
50
0
1998
1999
2000
2001
2002
Stewiacke
Economy 2001
Great Village 2001
Portapique 2001
Folly 2001
Debert 2001
Harrington 2002
Great Village 2002
Gaspereau adults 2001/02
Gaspereau post smolts 2001

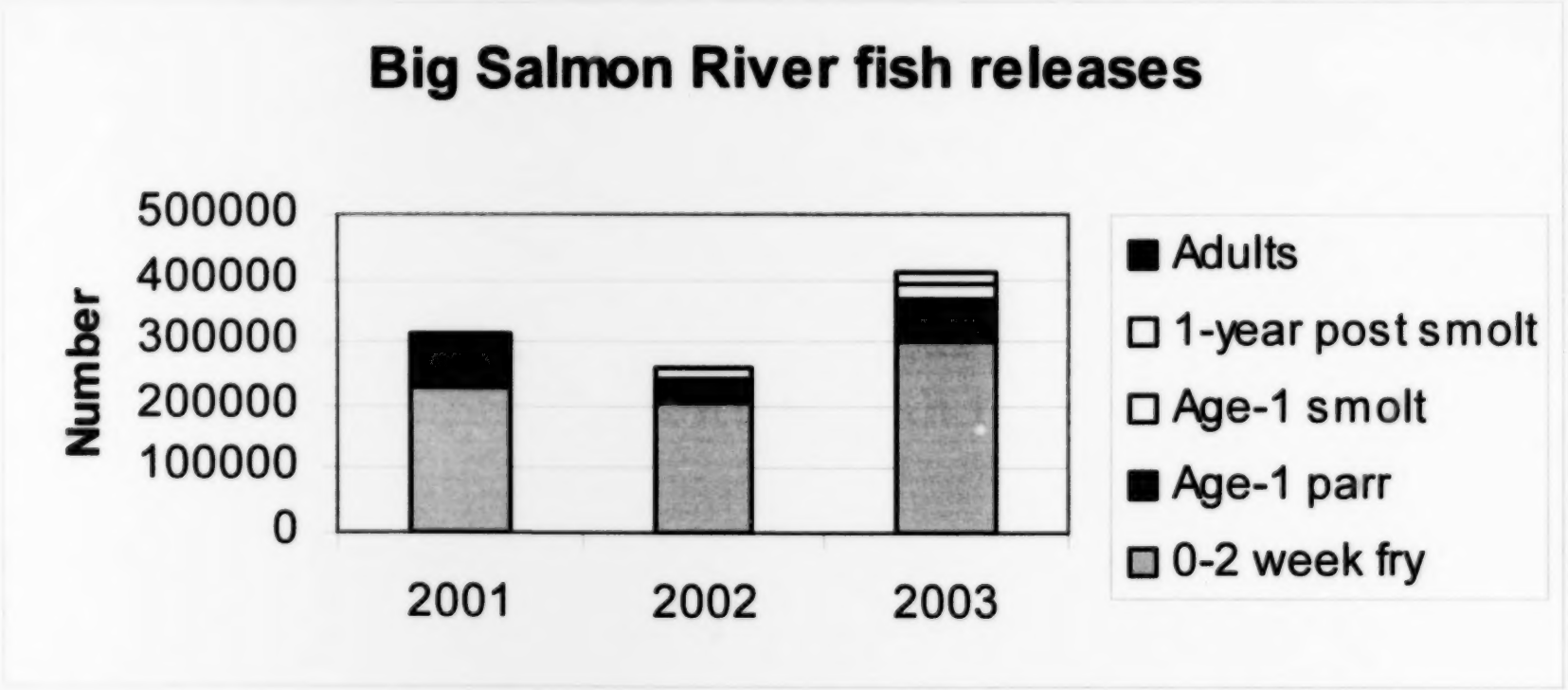
•Mating of mature individuals and rearing of progeny

- Mating of those fish that matured in 2000, 2001, 2002, and 2003, was according to the mating plan produced by the Genetics Technical Committee, IBOF Planning Group
- Progeny are reared to grow at a rate similar to fish in the wild
- Eggs produced: 300k to over 900k


Fate of Stewiacke River fish per collection year and year mated
Number of fish
450
400
350
300
250
200
150
100
50
0
Mortalities
Fish released
Fish not mated
Fish mated
2000 mating
2001 mating
2002 mating
2003 mating
2001 mating
2002 mating
2003 status
2002 mating
2003 status
1998 collection
1999 collection
2000 collection

Mating strategy

- Mature fish were mated according to priority
- Number of individuals from a full sib family, kinship, and previous contribution influenced priority status of the progeny
- Progeny were kept separate as low, medium or high priority fish
- In 2003 there were multiple "individual" matings

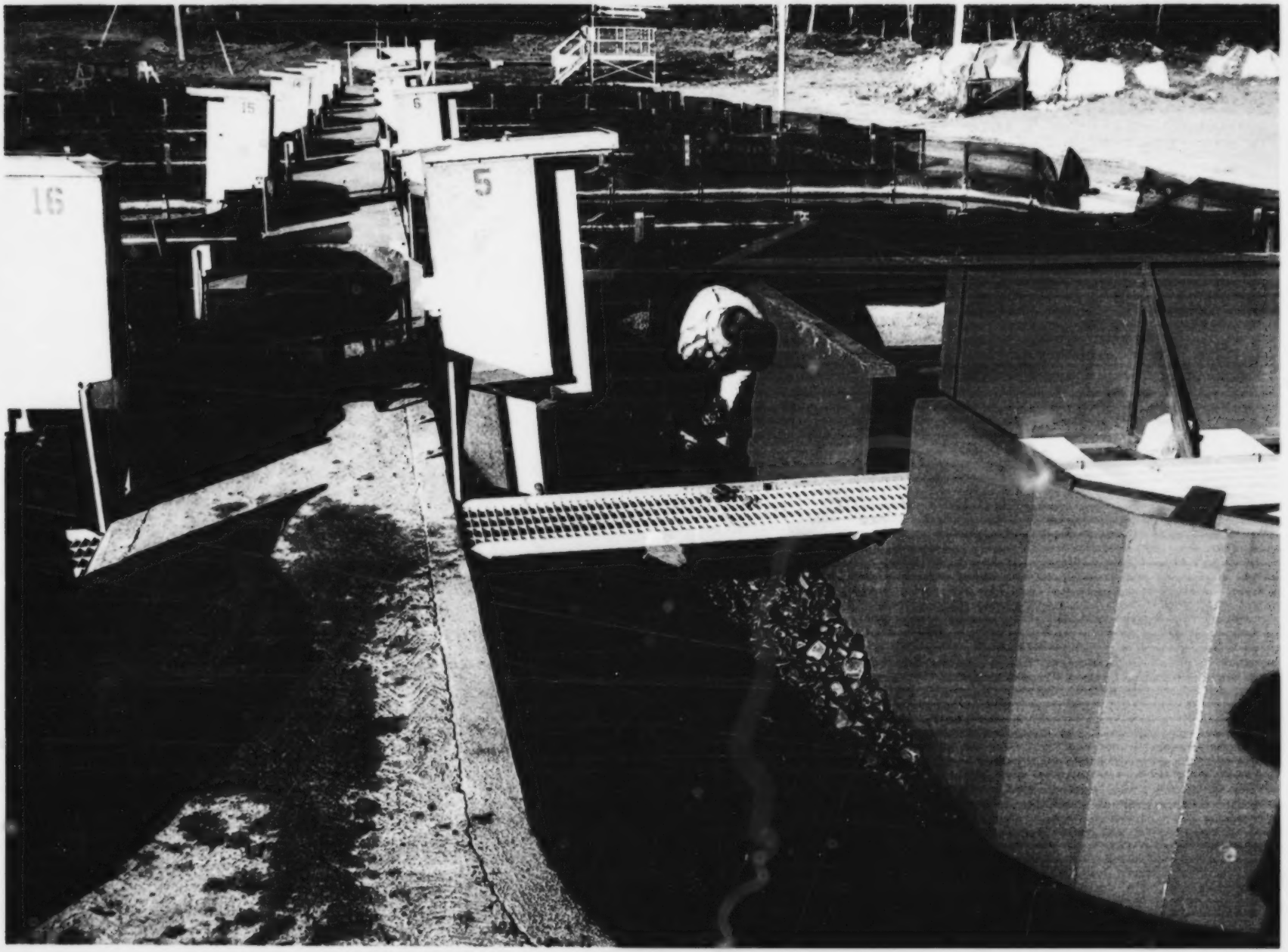

Big Salmon River fish releases
Number
500000
400000
300000
200000
100000
0
2001
2002
2003
Adults
1-year post smolt
Age-1 smolt
Age-1 parr
0-2 week fry

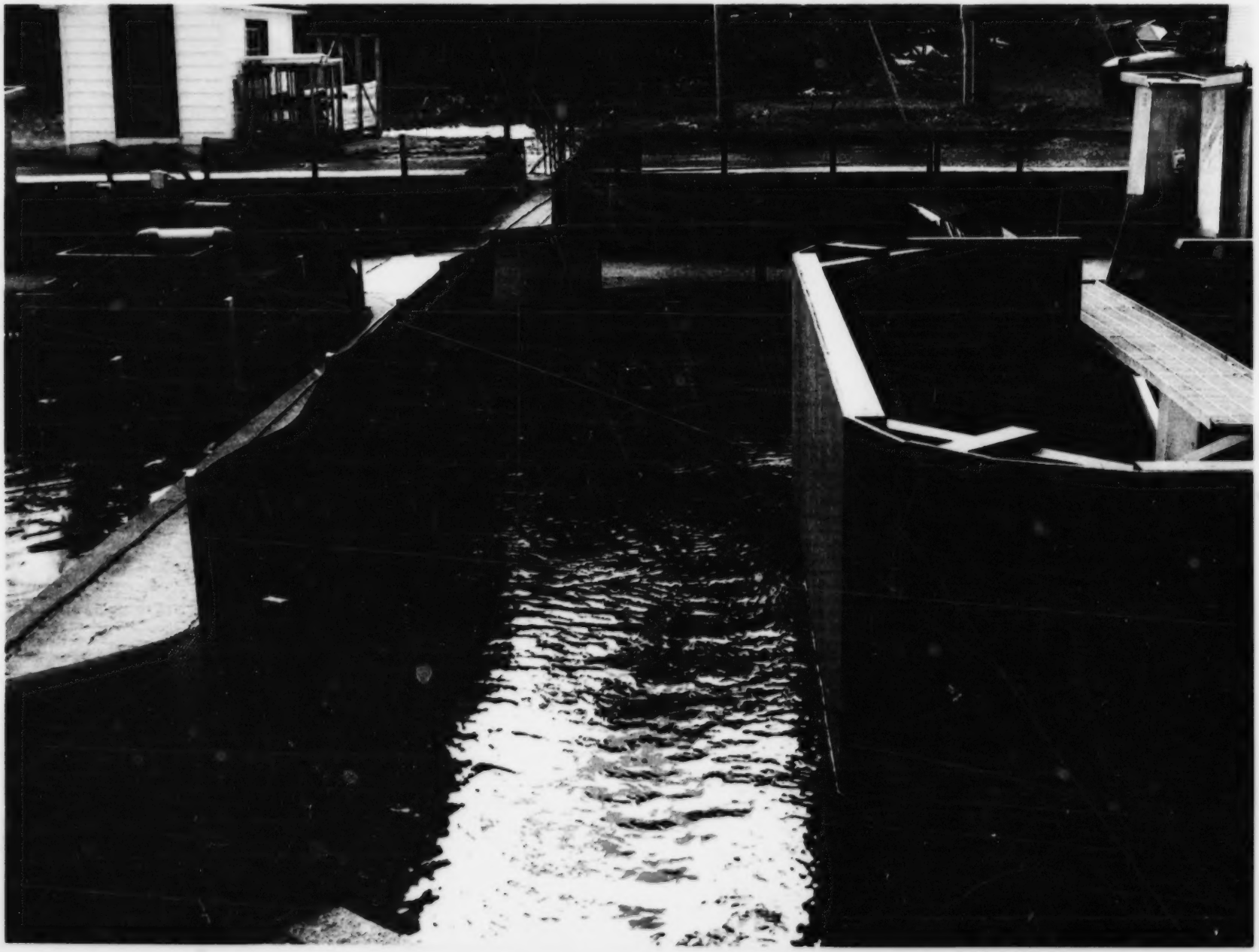
•Projects this year

- Adults released into spawning channels
- Precocious parr captured on Gaspereau River to mate with reconditioned and 2003 adults
- Smolts captured and taken into LGB
- Previously spawned adults and F1 grilse released to “in-river” living gene banks

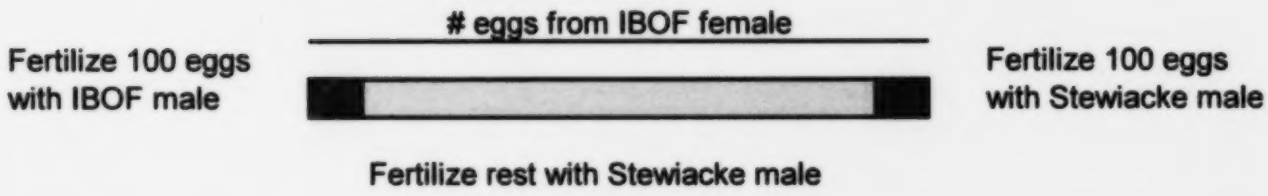
Projects this year continued

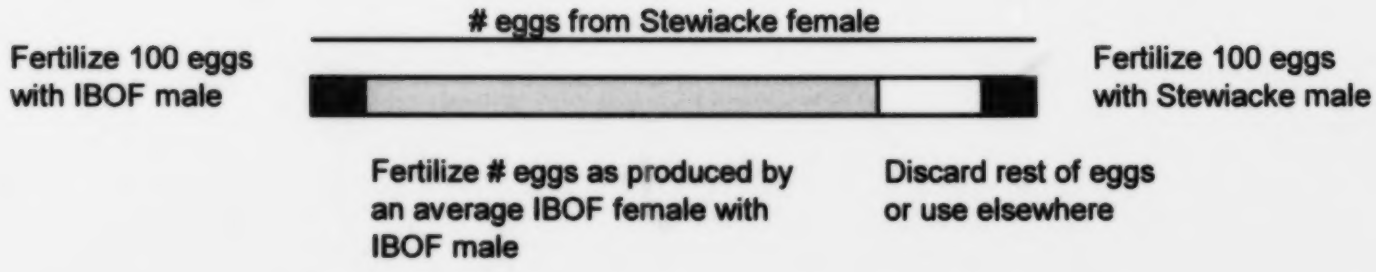
- Closer examination of diet related to egg quality
- Holding of adults at Mersey
- Cryopreservation of milt
- Site renovations


16
15
6
5

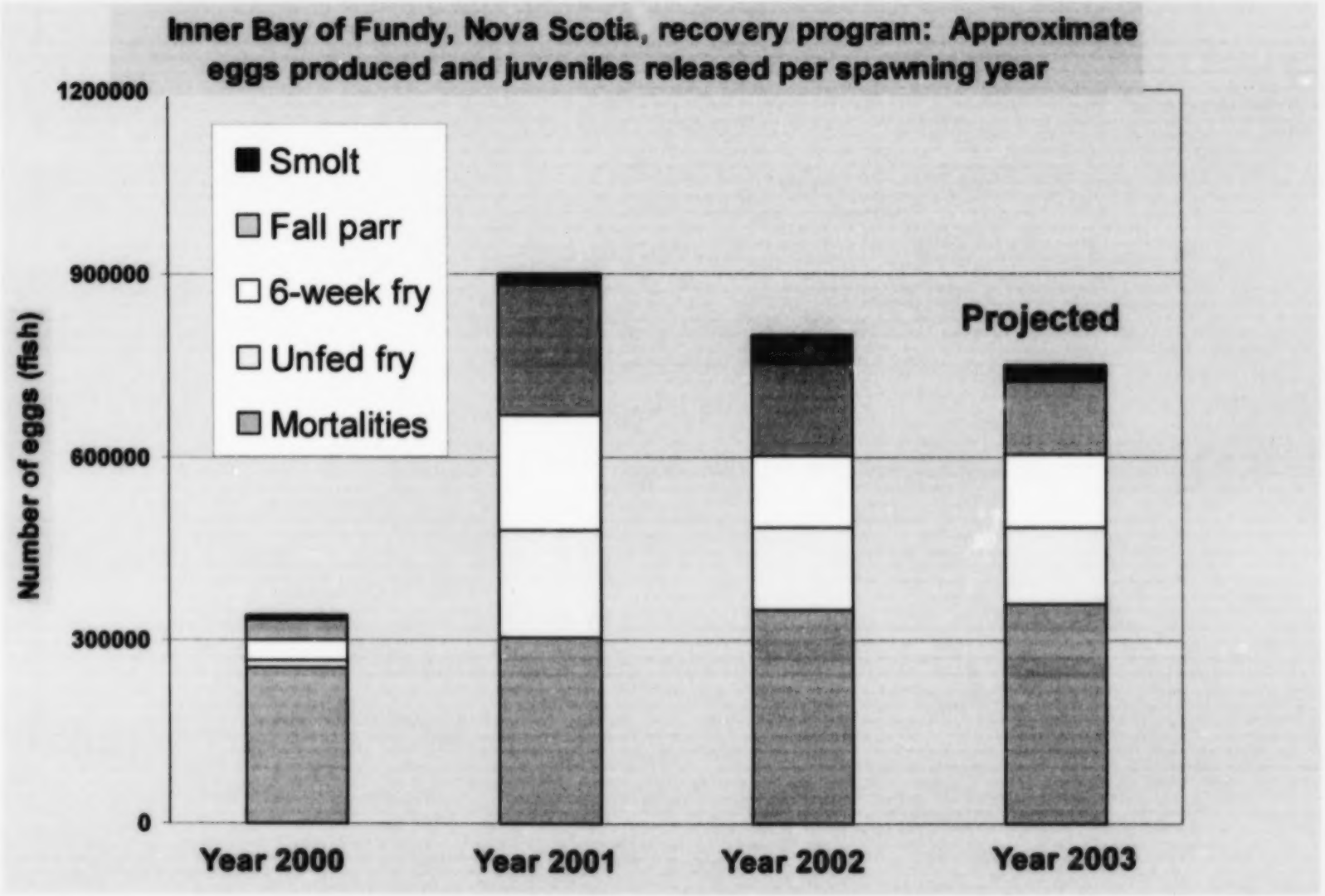


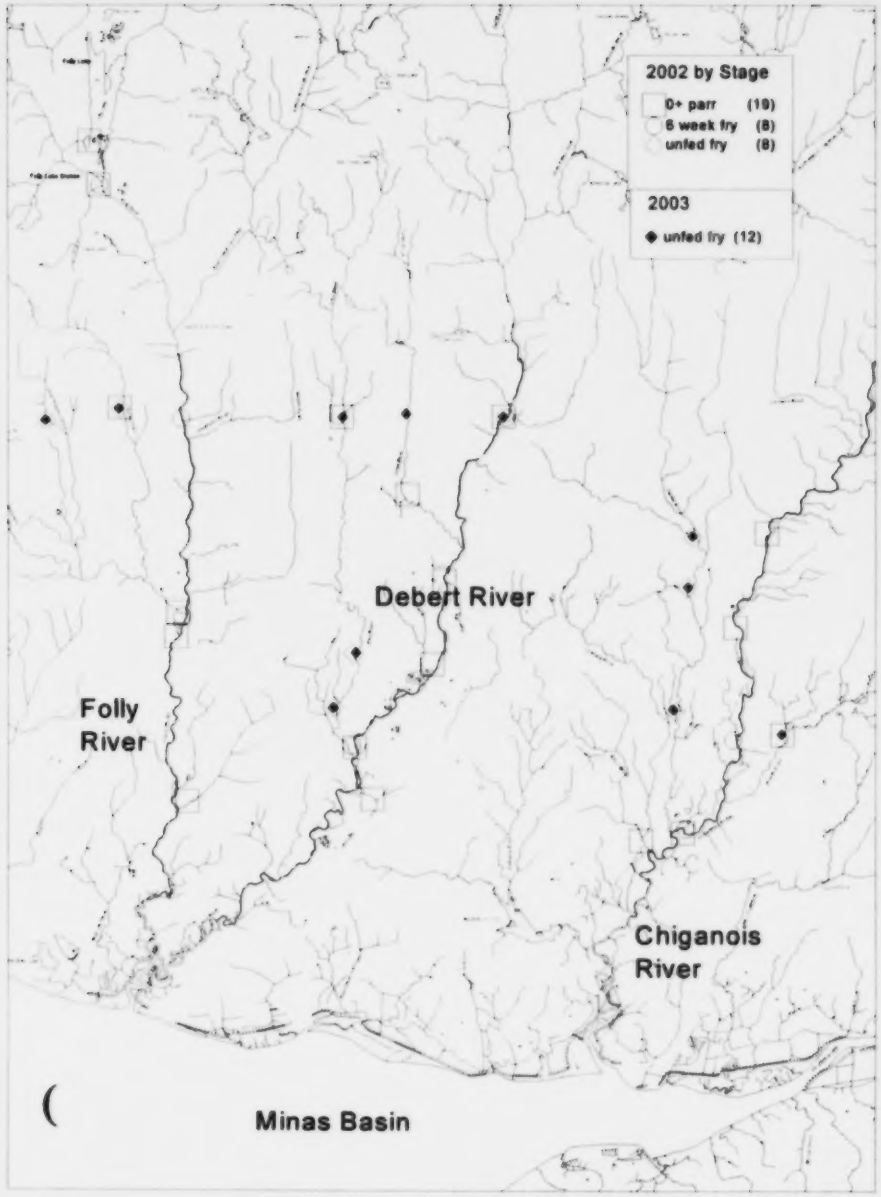
"Other" Minas Basin stock spawning 2003

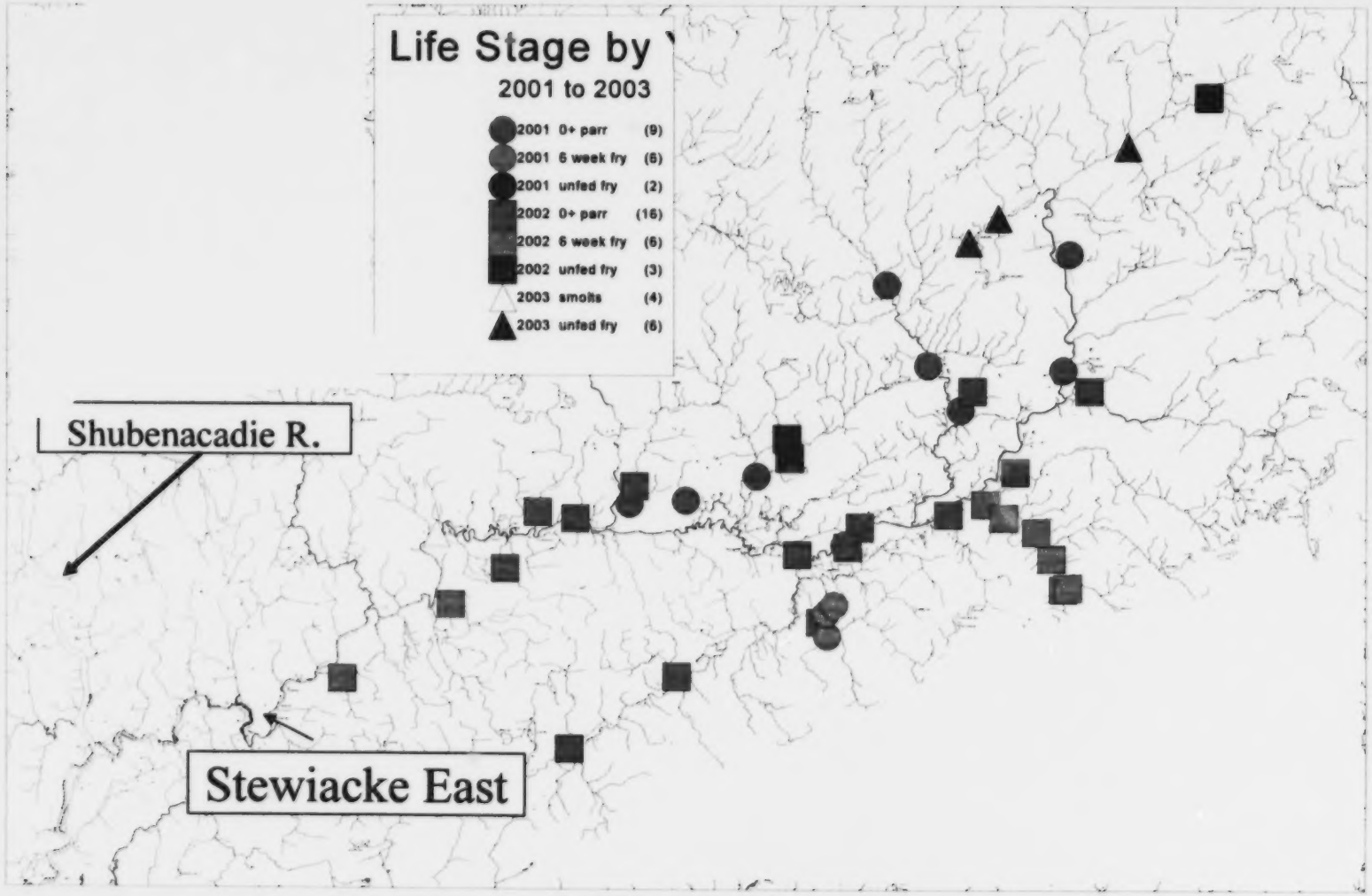

eggs from IBOF female
Fertilize 100 eggs with IBOF male
Fertilize 100 eggs with Stewiacke male
Fertilize rest with Stewiacke male


eggs from Stewiacke female
Fertilize 100 eggs with IBOF male
Fertilize 100 eggs with Stewiacke male
Fertilize # eggs as produced by an average IBOF female with IBOF male
Discard rest of eggs or use elsewhere

- Priority influenced location of distribution
- High and medium priority fish were to be distributed to the Stewiacke or Big Salmon
- Low priority fish were distributed to other Inner Bay rivers.
- Monitoring of the success of release by stage will be achieved with the use of genetics as a marker


Inner Bay of Fundy, Nova Scotia, recovery program: Approximate eggs produced and juveniles released per spawning year
1200000
900000
600000
300000
0
Number of eggs (fish)
Smolt
Fall parr
6-week fry
Unfed fry
Mortalities
Projected
Year 2000
Year 2001
Year 2002
Year 2003


2002 by Stage
0+ parr (10)
6 week fry (8)
unfed fry (8)
2003
unfed fry (12)
Debert River
Folly River
Chiganois River
Minas Basin


Life Stage by
2001 to 2003
2001 0+ parr (9)
2001 6 week fry (6)
2001 unfed fry (2)
2002 0+ parr (16)
2002 6 week fry (6)
2002 unfed fry (3)
2003 smolts (4)
2003 unfed fry (6)
Shubenacadie R.
Stewiacke East

Gaspereau River program

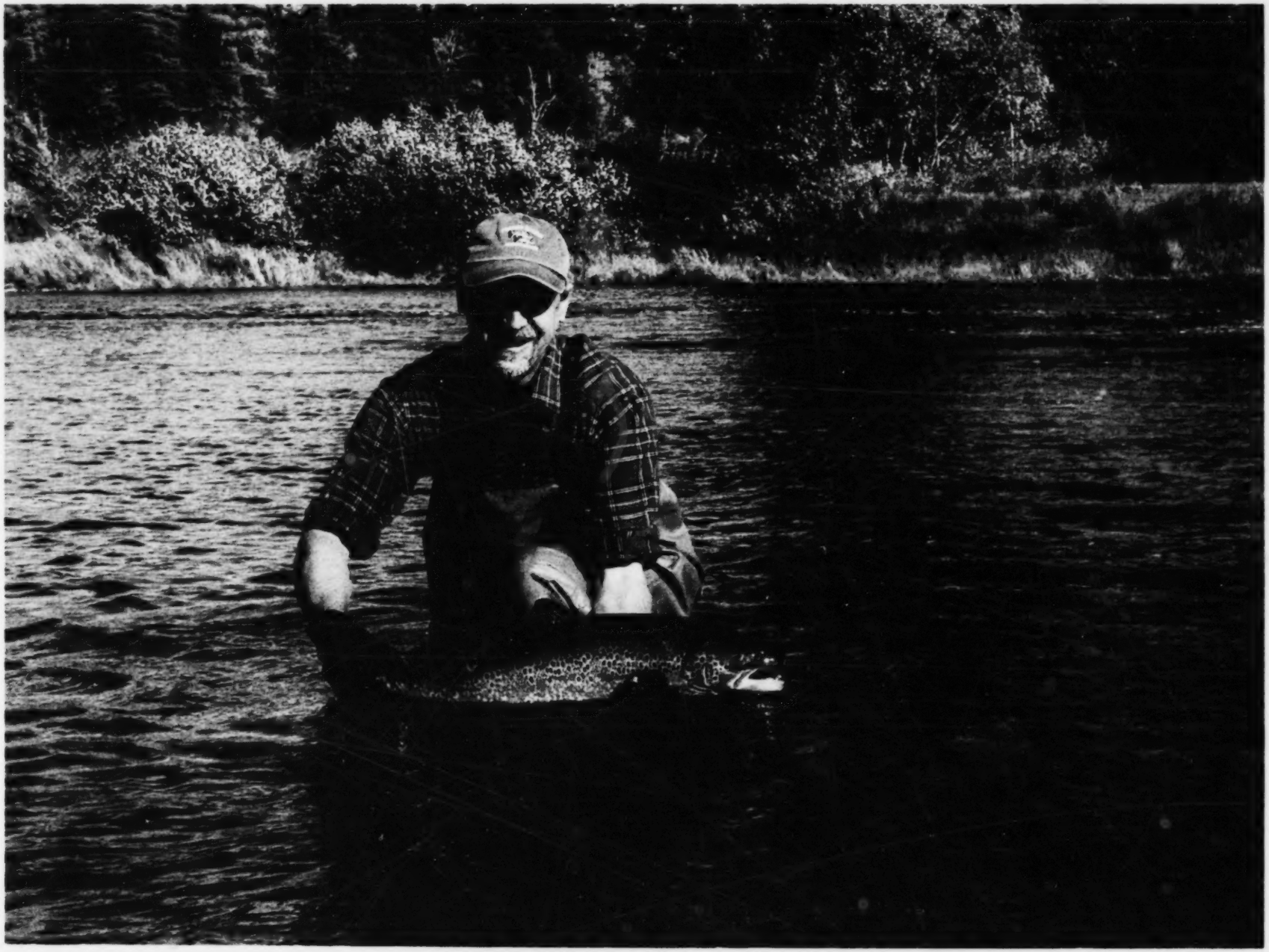
- Prior to 2002, an adult capture broodfish program
- Parr were collected in 2001 (67) for adult program and in 2003 (~40)
- Kelts from the 2001 and 2002 collections were reconditioned for repeat spawning
- Only 14 broodfish collected from the river in 2002 and 7 in 2003; 50+ smolt collected
- Mature fish were mated according to modified mating plan

Fish released on Gaspereau R.

- From the 2001 spawning:
- 10,000 6-week-old fry in June 2002
- 23,000 age 1 parr and 20,000 smolt released spring 2003

- From the 2002 spawning:
- 21,000 fall parr and proposed 12,000 smolt

- mating plans included maiden sea-run adults, reconditioned kelts and precocious parr



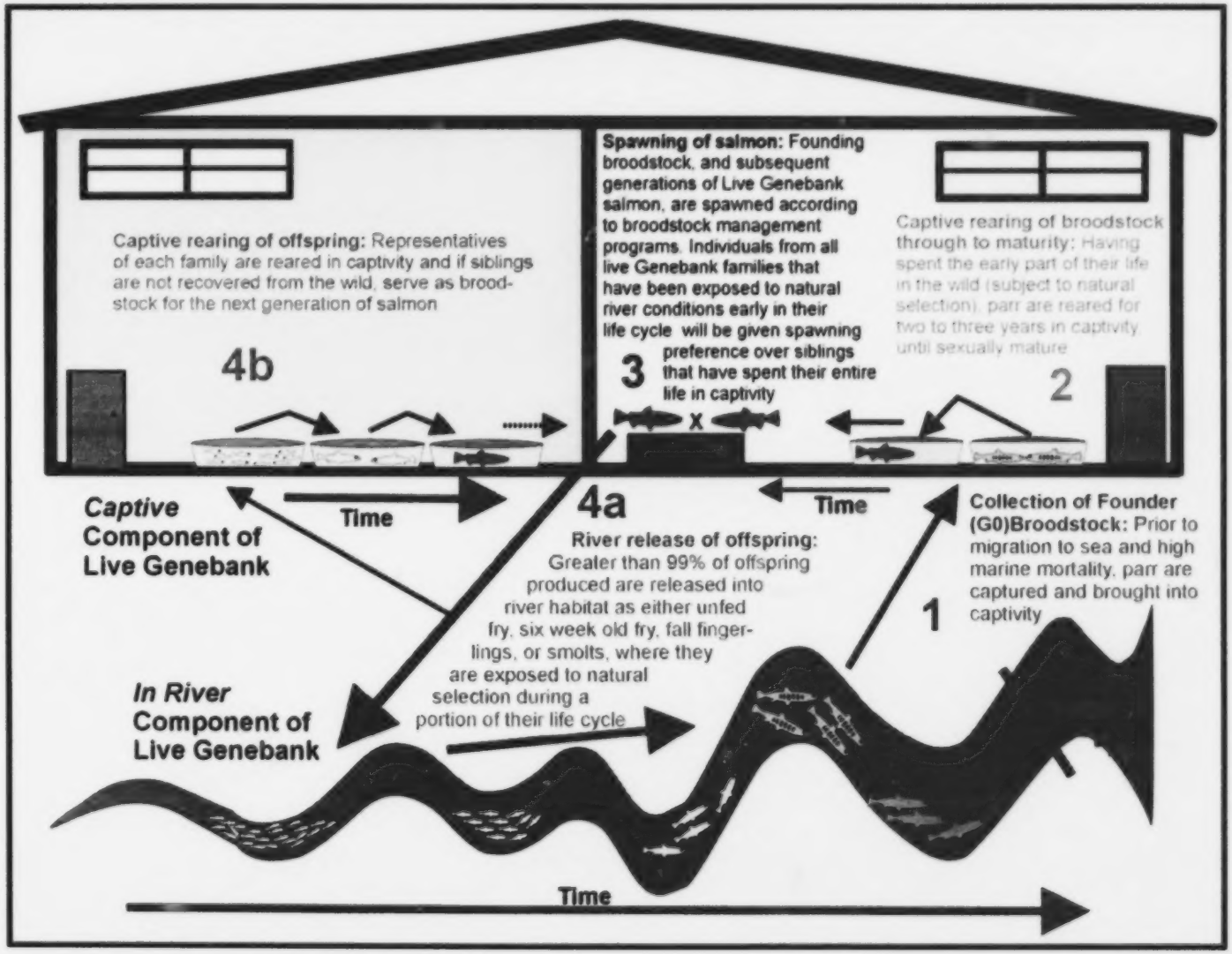
Biodiversity Facility Capacities

- Mactaquac's capacity is limited to the rearing of fish in 16 ponds (variable outputs as fish from 800,000 eggs or equivalents)
- Fish are reared on ground water that must be pumped at a cost to scarce resources
- Coldbrook capacity must be shared with Southern Upland (Atlantic coast of NS salmon stocks)
- In 2002, about 900 thousand eggs were produced; in the future, capacity will be limited to less than half of that number (350,000).

LGB Program

- Current thinking is to maintain as many families as possible as other investigations look at causes and possible solutions

- Recovery strategy schedule - a major reassessment in 2010 (2 generations)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4b
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3
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2
Captive Component of Live Genebank
Time
4a
Time
River release of offspring: Greater than 99% of offspring produced are released into river habitat as either unfed fry, six week old fry, fall finger-lings, or smolts, where they are exposed to natural selection during a portion of their life cycle
Collection of Founder (G0)Broodstock: Prior to migration to sea and high marine mortality, parr are captured and brought into captivity
1
In River Component of Live Genebank
Time

1 **Collection of founder (G0) broodstock**	**2** **Captive rearing through to maturity**	Tissue sampling, DNA finger-printing, and pedigreeing G0 broodstock	**3** **Spawning of G0 founder brood-stock***	**4** **Retention/ river release of G1 fry, G1 parr**	**4** **River release of G1 smolt**	**1** **Capture of wild exposed G1 fry and parr as late parr or smolt ****	**2** **Captive rearing of wild exposed G1 parr/ smolt through to maturity**	Possible adult return and wild spawning of G1 released as smolts***	Tissue sample, finger-print, pedigree captive reared G1	**3** **Spawning of G1 salmon; priority given to wild exposed individuals+**	**4** **Retention/ river release of G2 fry, G2 parr**
1998	1998-2000	2000	2000	2001	2002/ **2003**	**2003**	**2003-2005**	**2003**/ 2004	2004	2005	2006
1999	1999-2001	2001	2001	2002	**2003**/ 2004	2004	2004-2006	2004/ 2005	2005	2006	2007
2000	2000-2002	2002	2002	**2003**	2004/ 2005	2005	2005-2007	2005/ 2006	2006	2007	2008
2001	2001-**2003**	**2003**	**2003**	2004	2005/ 2006	2006	2006-2008	2006/ 2007	2007	2008	2009
2002	2002-2004	2004	2004	2005	2006/ 2007	2007	2007-2009	2007/ 2008	2008	2009	20010
2003	2003-2005	2005	2005	2006	2007/ 2008	2008	2008-2010	2008/ 2009	2009	2010	2011

Calculating Mean Kinship

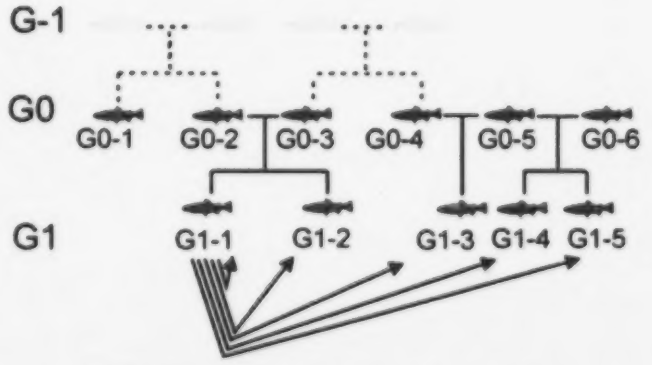
$$mki = \frac{\sum_{j=1}^{N} f_{ij}}{N}$$

Equation 5.5,
Ballou and Lacy, 1995.

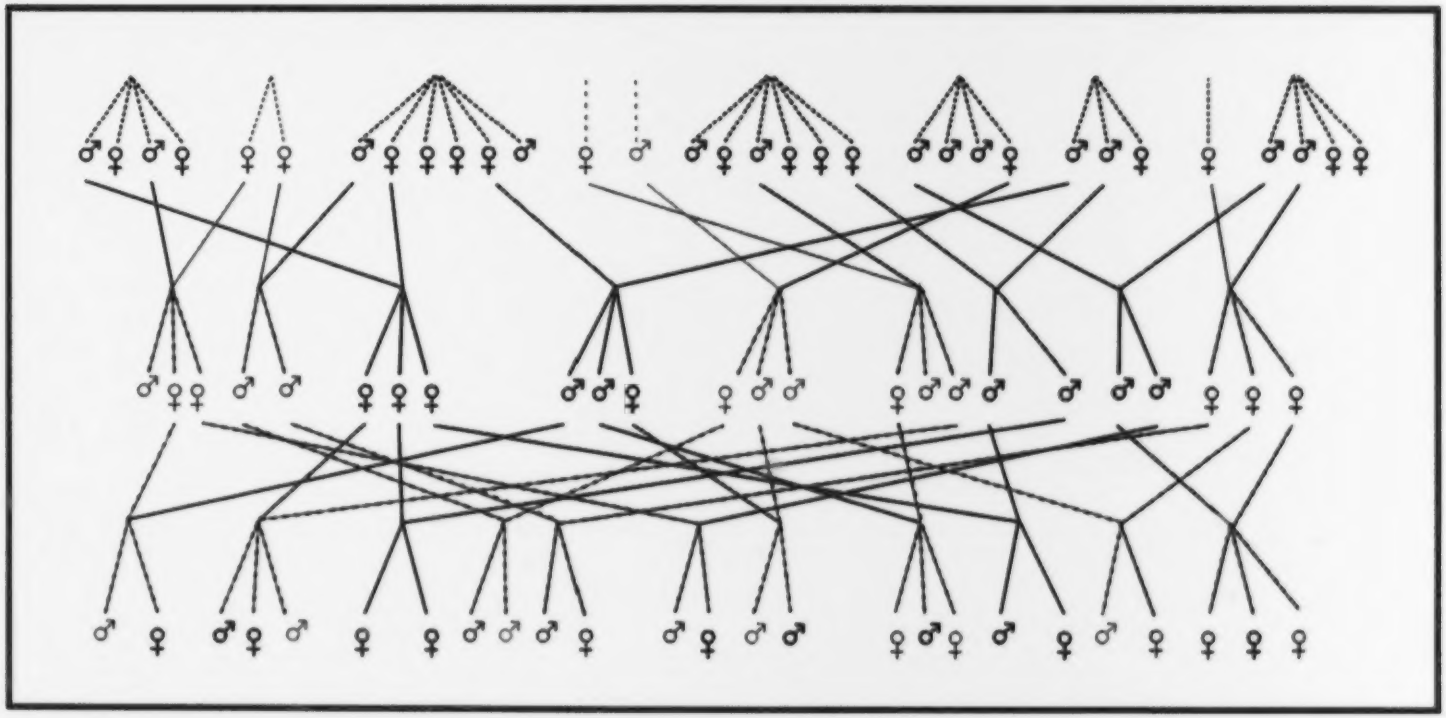
f_{ij} = kinship coefficient, which is the probability that alleles drawn randomly from individuals (i and j) are identical by decent

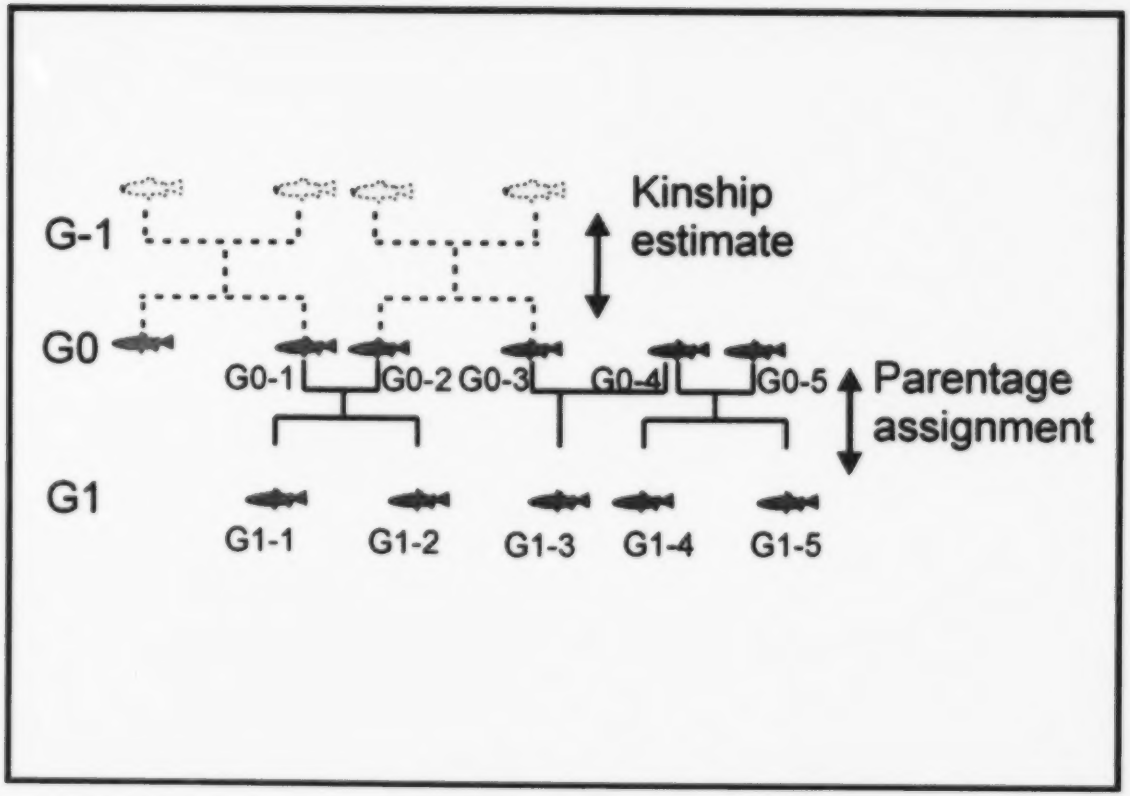
mki= the mean kinship of individual I, and is defined as the average kinship coefficient between that individual and all others in the sample, including itself

N= the number of living individuals in the sample



mk (G1-1)= 1.0+0.25+0.125+0+0/5




G-1
G0
G1
Kinship
estimate
G0-1
G0-2
G0-3
G0-4
G0-5
Parentage
assignment
G1-1
G1-2
G1-3
G1-4
G1-5

Primary Live Gene Bank	Year	Number of juveniles recruited into primary iBoF LGB's	Stage collected	Possible origins of collected juveniles	Number of crosses performed
Big Salmon	1998	268	parr	wild	n/a
Big Salmon	1999	216	parr	wild	n/a
Big Salmon	2000	313	parr	wild	89
Big Salmon	2001	304	parr	wild	125
Big Salmon	2002	454	parr	wild/LGB*	129
Big Salmon	2003	n/a	smolt	wild/LGB	n/a
Stewiacke	1998	401	parr	wild	n/a
Stewiacke	1999	189	parr	wild	n/a
Stewiacke	2000	232	parr	wild	175
Stewiacke	2001	201	parr	wild	108
Stewiacke	2002	4	parr	wild/LGB*	35
Stewiacke	2003	n/a	n/a	wild/LGB	n/a

Population and year of sample collection	Basin	MtDNA clade 1-3[+]	Primary life - history charact-eristics	Primary responsible agency	Standardised number of microsatellite alleles (variance)	Gene diversity
Primary Live Gene Bank (sample year)						
Big Salmon R. (2000)	C	no	L	DFO	11.35 (197.04)	0.848
Stewiacke R. (2000)	M	yes	L	DFO	10.61 (187.86)	0.833
Additional Live Gene banks (underway or under consideration)						
Gaspereau R. (1999-2001)	M	yes	D	DFO	8.48 (188.38)	0.756
Great Village R.(2000)	M	yes	L	DFO	8.68 (202.35)	0.807
Economy R. (2000)	M	yes	L	DFO	6.81 (135.72)	0.738
Harrington R. (2002)	M	n/a	L	DFO	n/a	n/a
Black R. (2000)	C	no	L	DFO	n/a	n/a
Irish R. (2000)	C	no	L	DFO	n/a	n/a
Upper Salmon R. (2001, 2002)	C	n/a	L	EC	9.27 (140.45)	0.791
Saint John River reference population (2001)		no	D	DFO	11.67	0.850

Management of remaining Minas Basin populations

Information on non BSR/STW populations

River	Number of mature females (03)	Number of mature males (03)	Kinship
Debert	0	2	
Portapique	0	6	
Folly	0	1	
Great Village	5	51	all remaining females single half-sib group
Economy	8	11	

Steps being taken to mitigate loss of wild fitness of LGB generation to be released into the wild

-wild exposure of LGB F1, etc ("in river" live gene bank component)

-adoption of rearing practices to approximate natural conditions, to minimise domestication selection

-minimise variation in family size, thereby reducing within-family component of domestication selection

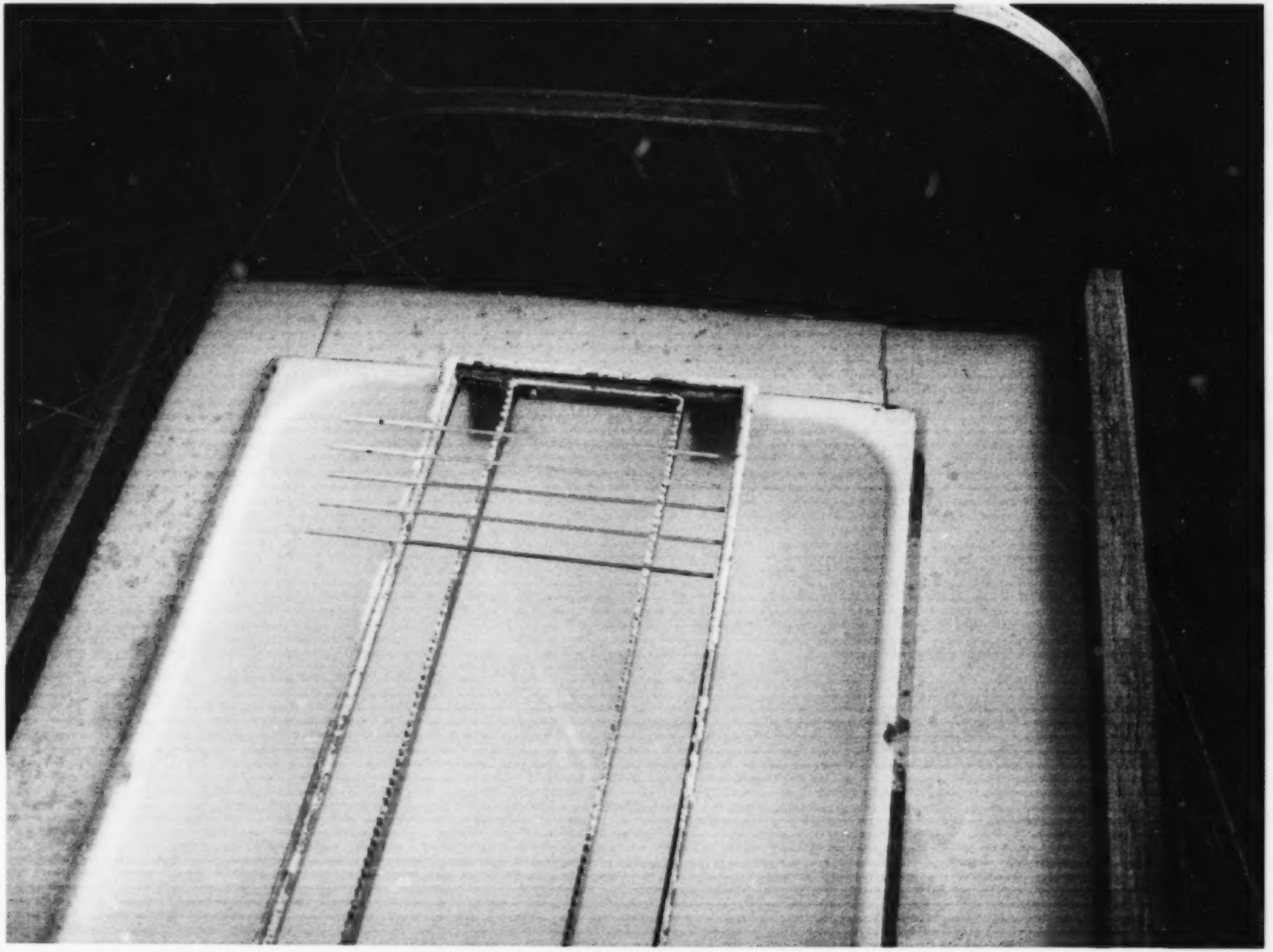
-MK breeding program to minimise inbreeding and loss of genetic variation

CRYOPRESERVATION OF GERM PLASM

(1) Restoration of wild salmon populations

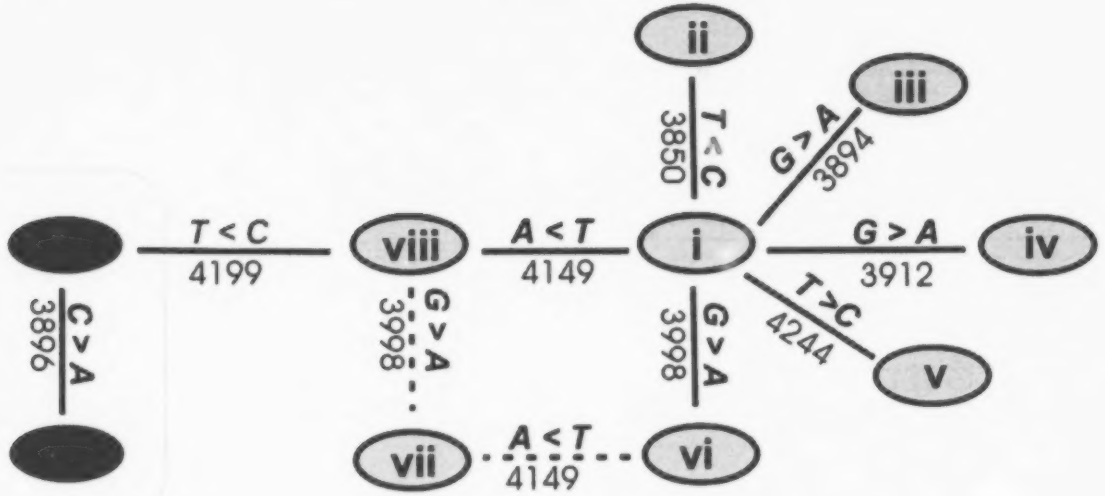
(2) Addition of genetic variation to depauperate future populations

(3) Minimising genetic change between founder and subsequent generations of Live Gene Bank populations



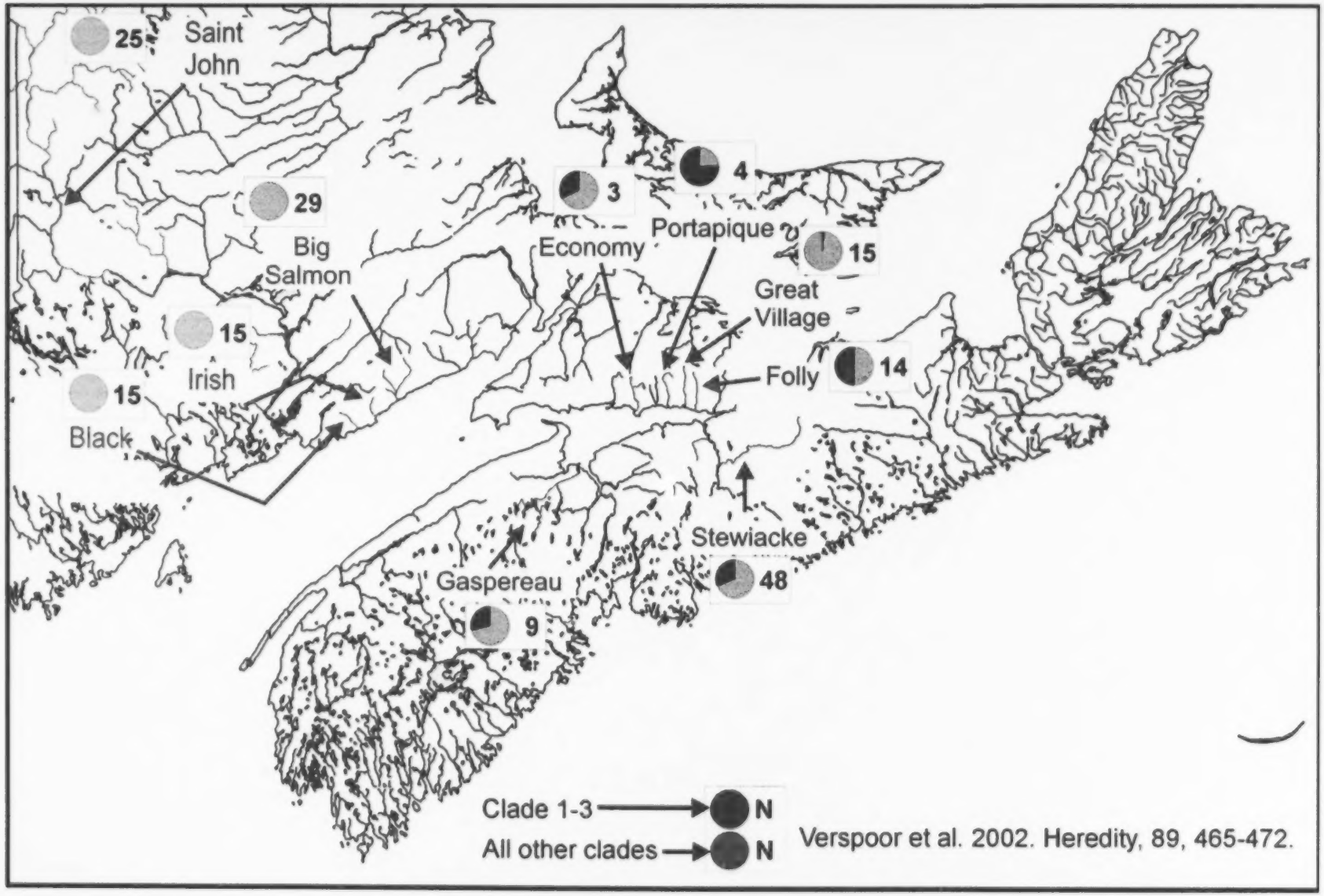
Recent update on analyses of the distribution of the inner Bay mtDNA lineage identified by Verspoor et al. (4199)

Minimum spanning network of mtDNA ND1 haplotype variation observed in Atlantic salmon from the Bay of Fundy



Clade 1-3

Source: Verspoor, E., O'Sullian, M., Arnold, A.L. , Knox, D., and Amiro, P. G. 2002. Restricted matrilineal gene flow and regional differentiation among Atlantic salmon *(Salmo salar L.)* populations within the Bay of Fundy, eastern Canada. Heredity, 89, 465-472.



Verspoor et al. 2002. Heredity, 89, 465-472.

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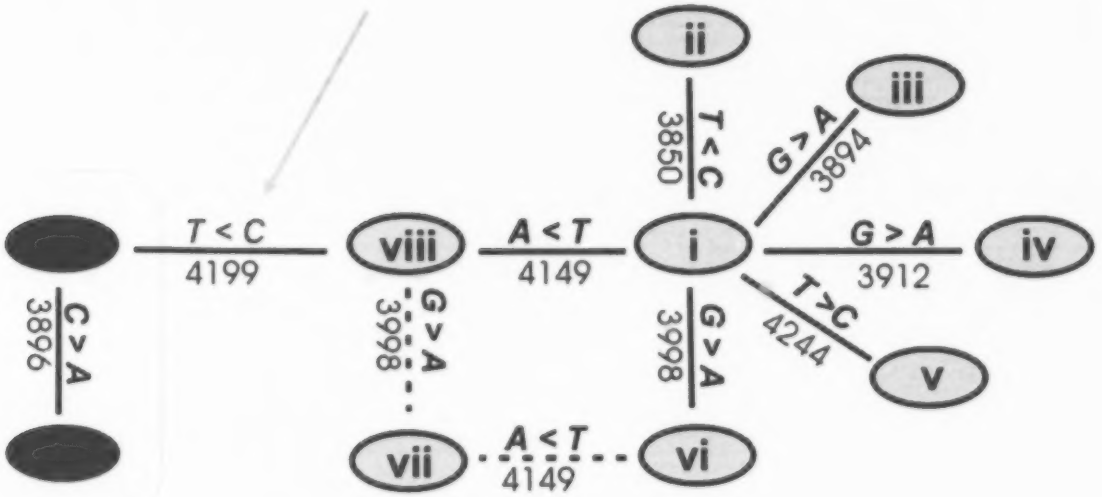

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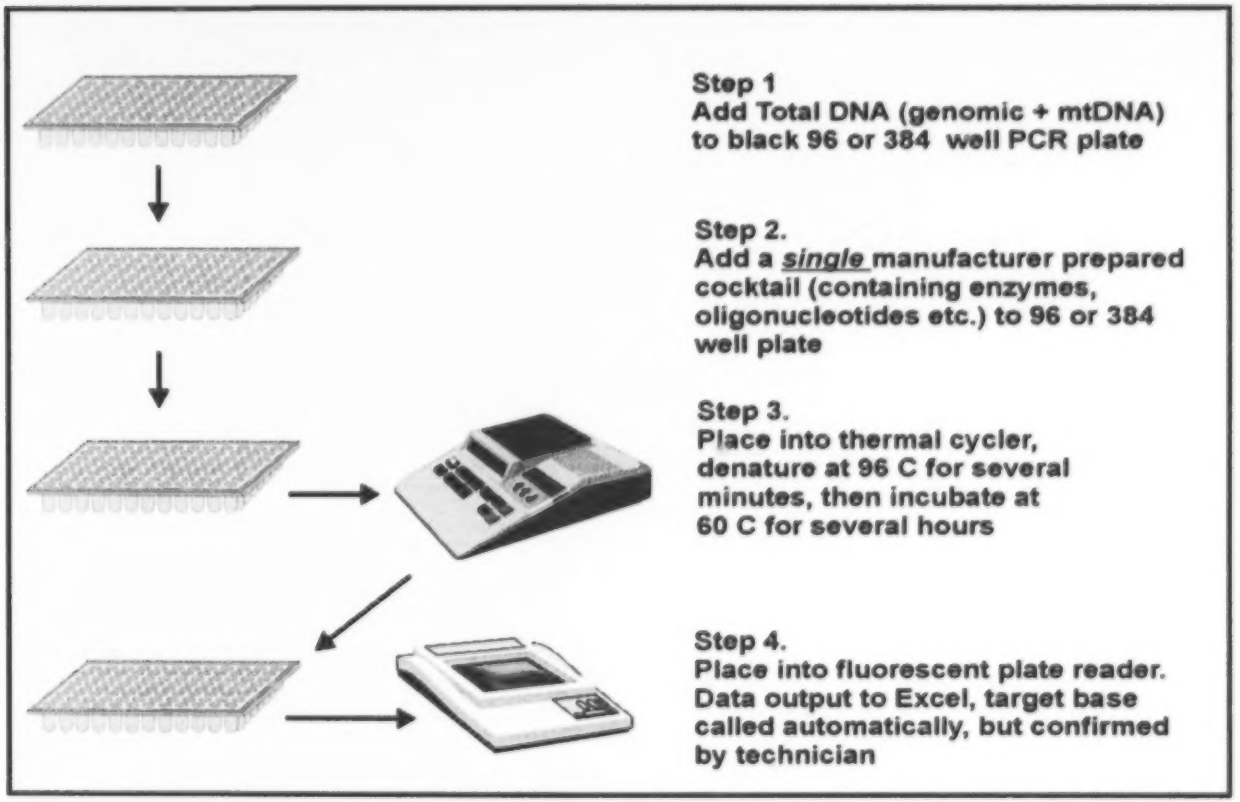
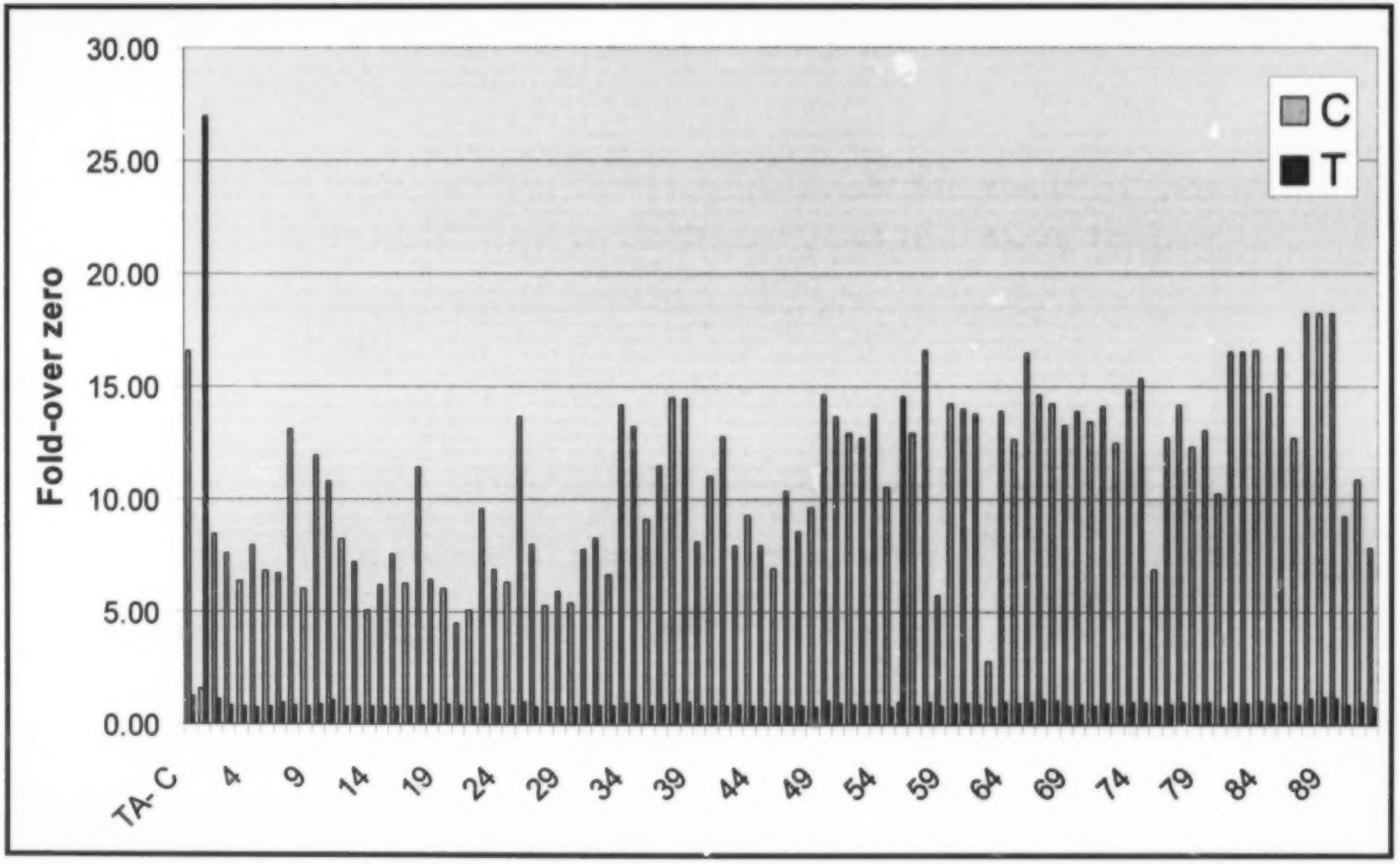
Procedure for Genome Direct SNP analysis of ND1 4199

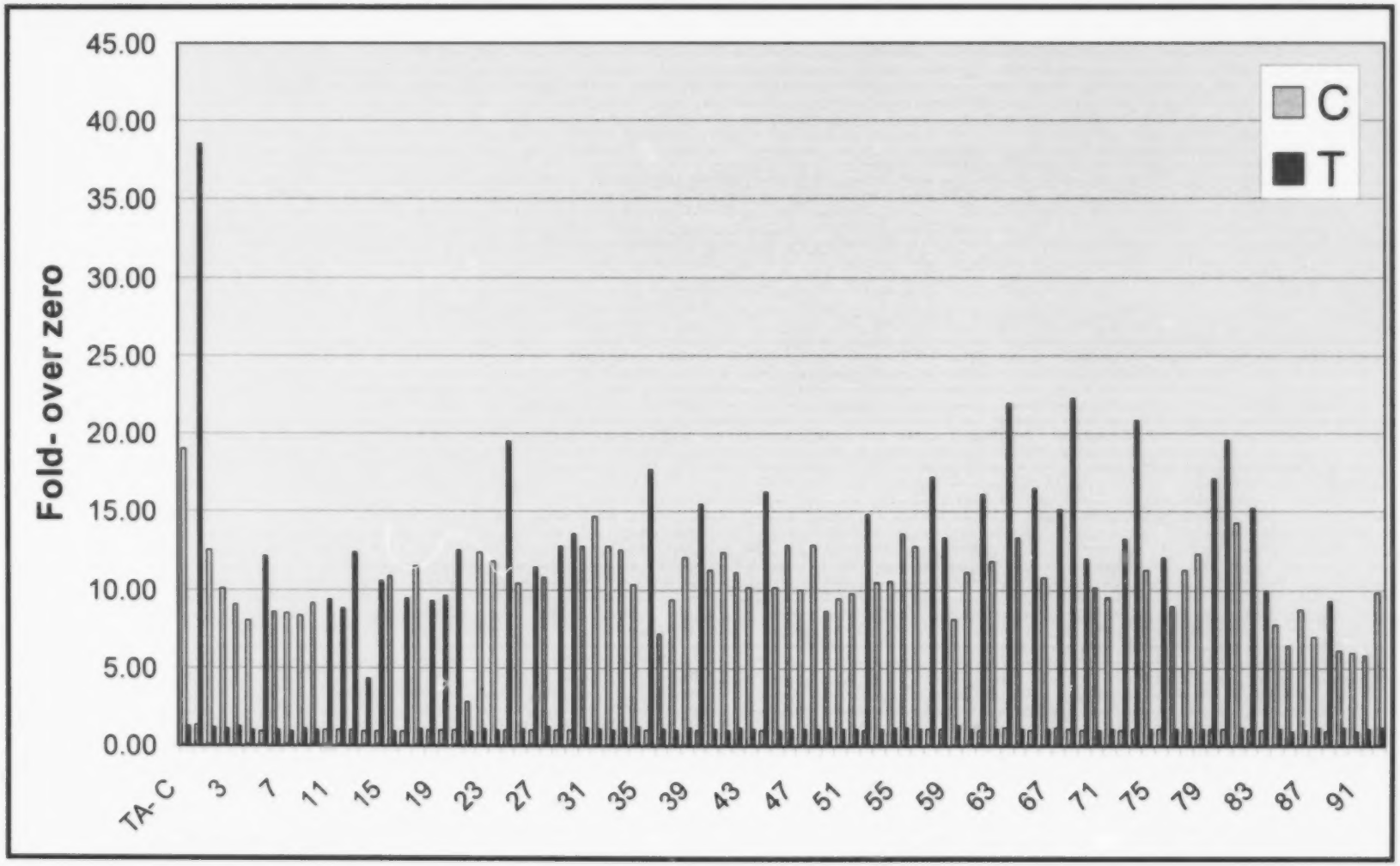

Step 1
Add Total DNA (genomic + mtDNA) to black 96 or 384 well PCR plate
Step 2.
Add a *single* manufacturer prepared cocktail (containing enzymes, oligonucleotides etc.) to 96 or 384 well plate
Step 3.
Place into thermal cycler, denature at 96 C for several minutes, then incubate at 60 C for several hours
Step 4.
Place into fluorescent plate reader. Data output to Excel, target base called automatically, but confirmed by technician

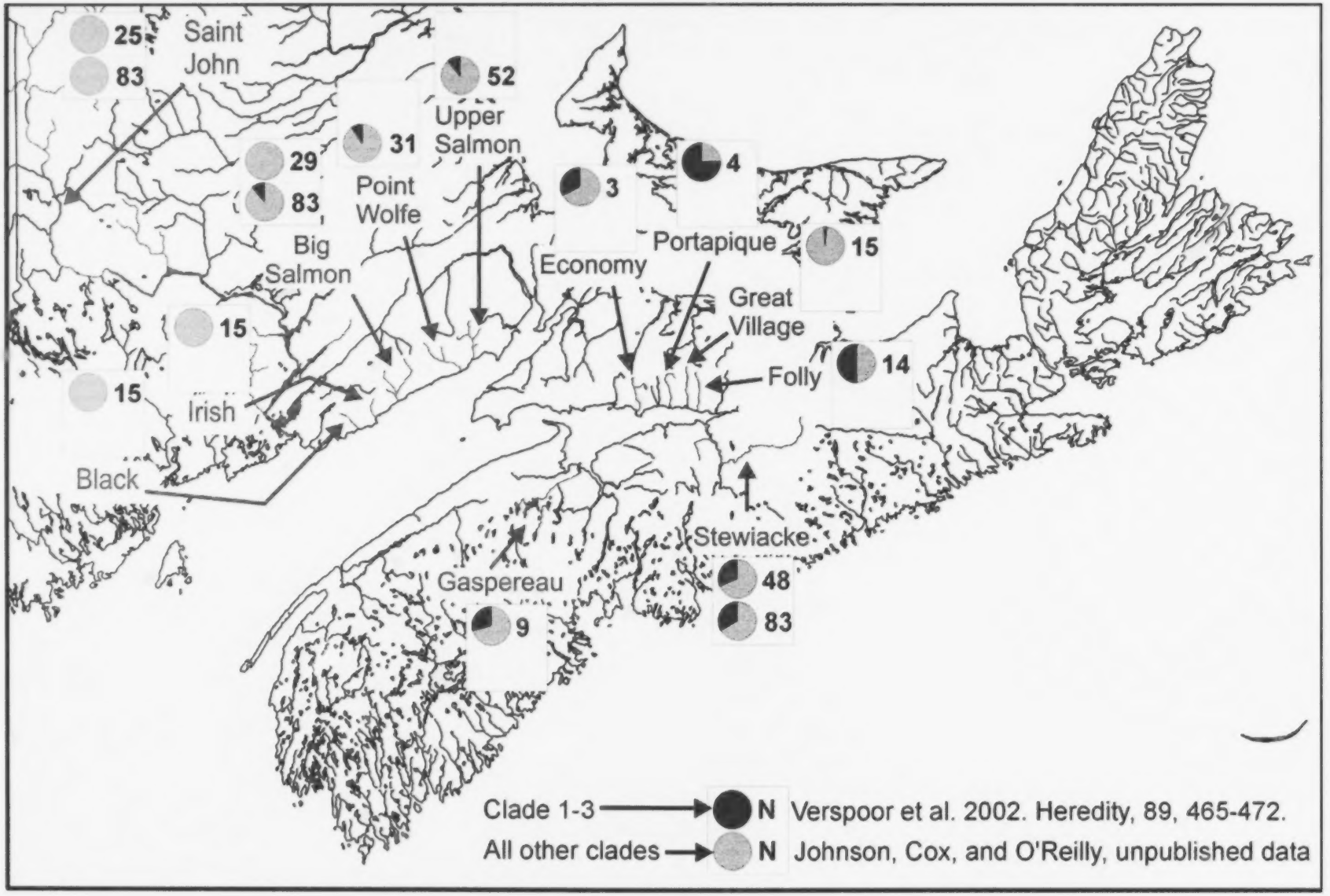
-very simple- add DNA>add cocktail>incubate>read results
-very inexpensive (as low as 0.30 cents per assay)
-manufacturer develops SNP system based on user's submitted sequences, and bears costs of failed oligonucleotide combinations
-ideal for analyses of large numbers of samples

MtDNA SNP site 4199 from multiple locations from Atlantic salmon form the Saint John River system, New Brunswick



MtDNA SNP site 4199 from Atlantic salmon from the Stewiacke River, Nova Scotia




25
83
Saint John
52
Upper Salmon
31
29
83
Point Wolfe
Big Salmon
3
4
Portapique
15
Economy
Great Village
15
15
Irish
Folly
14
Black
Stewiacke
Gaspereau
48
9
83
Clade 1-3
N
All other clades
N
Verspoor et al. 2002. Heredity, 89, 465-472.
Johnson, Cox, and O'Reilly, unpublished data

European Aquaculture salmon and inner Bay of Fundy Salmon

To date, identified in the following rivers

-Magaguadavic River

-Black River

-Upper Salmon River

EVIDENCE

-mitochondrial DNA nucleotide sequence

-5 nuclear microsatellites (length polymorphism)

-co-occurrence of multiple alleles from specific loci, and from multiple INDEPENDENT loci

-complete absence of alleles in ALL previously analysed inner Bay and Southern Upland salmon

-complete absence of individuals with just ONE European allele at a SINGLE locus

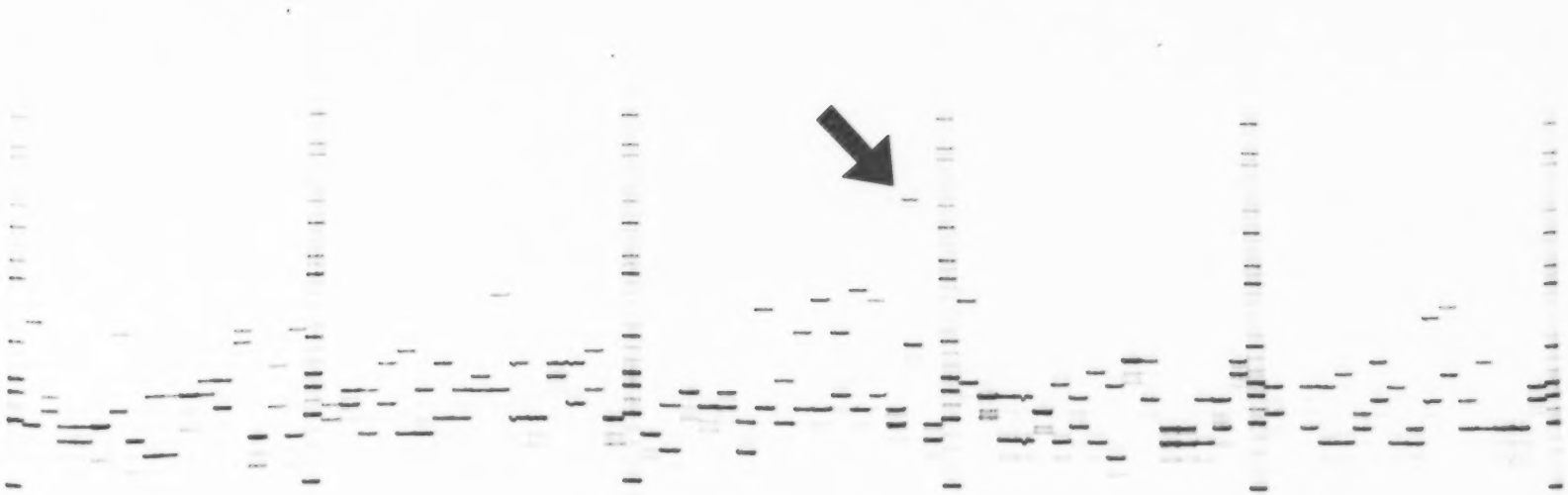


Figure 3. Denaturing electrophoresis gel of locus Ssa 197, imaged on a hitachi FMBIO. The arrow designates suspected aquaculture escape number UNMAG X-24. Note the large discontinuity between the upper allele from UNMAG X-24 and all other alleles observed in 80 or so individuals presented here.

Figure 2. Denaturing electrophoresis gel of locus Ssa 202, imaged on a hitachi FMBIO. The large arrow designates suspected aquaculture escape number UNMAG X-24, and the small arrow aquaculture escape UNMAG X-15. Note the large discontinuity in size between BOTH alleles belonging to UNMAG X-24 and the smaller allele belonging to individual UNMAG-15, and all other alleles from this collection of 80 or so samples.

Sample identifier	Type	Fam Ext	Num Ext	Fam Full	Num Full
USR070602HO51	P02	1	16	1	11
USR090601SOF002	S01	1	16	1	11
USR110601SOF010	S01	1	16	1	11
USR110601SOF012	S01	1	16	1	11
USR110601SOF015	S01	1	16	1	11
USR110601SOF017	S01	1	16	1	11
USR130601SOF022	S01	1	16	1	11
USR130601SOF023	S01	1	16	1	11
USR150601SOF024	S01	1	16	1	11
USR150601SOF025	S01	1	16	1	11
USR260802HOS004F003	P02	1	16	1	11
USR110601SOF013	S01	1	16	10	2
USR150601SOF026	S01	1	16	10	2
USR230802HOS901	P02	1	16	13	1
USR110601SOF008	S01	1	16	19	1
USR090601SOF001	S01	1	16	21	1
USR030602HO49	P02	2	8	5	5
USR040901HOUSR014AS11	P01	2	8	5	5
USR300801HOUSR013AS10	P01	2	8	5	5
USR300801HOUSR013AS11	P01	2	8	5	5
USR040602HO50	P02	3	8	5	5
USR040901HOUSR014AS07	P01	2	8	11	2
USR040901HOUSR014AS14	P01	2	8	11	2
USR040901HOUSR014AS16	P01	2	8	27	1
USR040901HOUSR014AS09	P01	3	16	2	5
USR290502HO35	P02	3	16	2	5
USR300801HOUSR013AS01	P01	3	16	2	5
USR300801HOUSR013AS05	P01	3	16	2	5
USR300801HOUSR013AS08	P01	3	16	2	5
USR040901HOUSR014AS04	P01	3	16	14	3
USR040901HOUSR014AS10	P01	3	16	14	3
USR300801HOUSR013AS07	P01	3	16	14	3
USR040901HOUSR014AS08	P01	3	16	16	3
USR290502HO43	P02	3	16	16	3
USR260802HOS004F004	P02	3	16	16	3
USR260802HO013AS02	P02	3	16	18	2
USR260802HOS002F002	P02	3	16	18	2
USR300801HOUSR013AS03	P01	3	16	22	2
USR300801HOUSR013AS04	P01	3	16	22	2
USR040901HOUSR014AS12	P01	3	16	23	1

Type P01=Parr 2001; P02=Parr 2002; S01= Smolt 2001

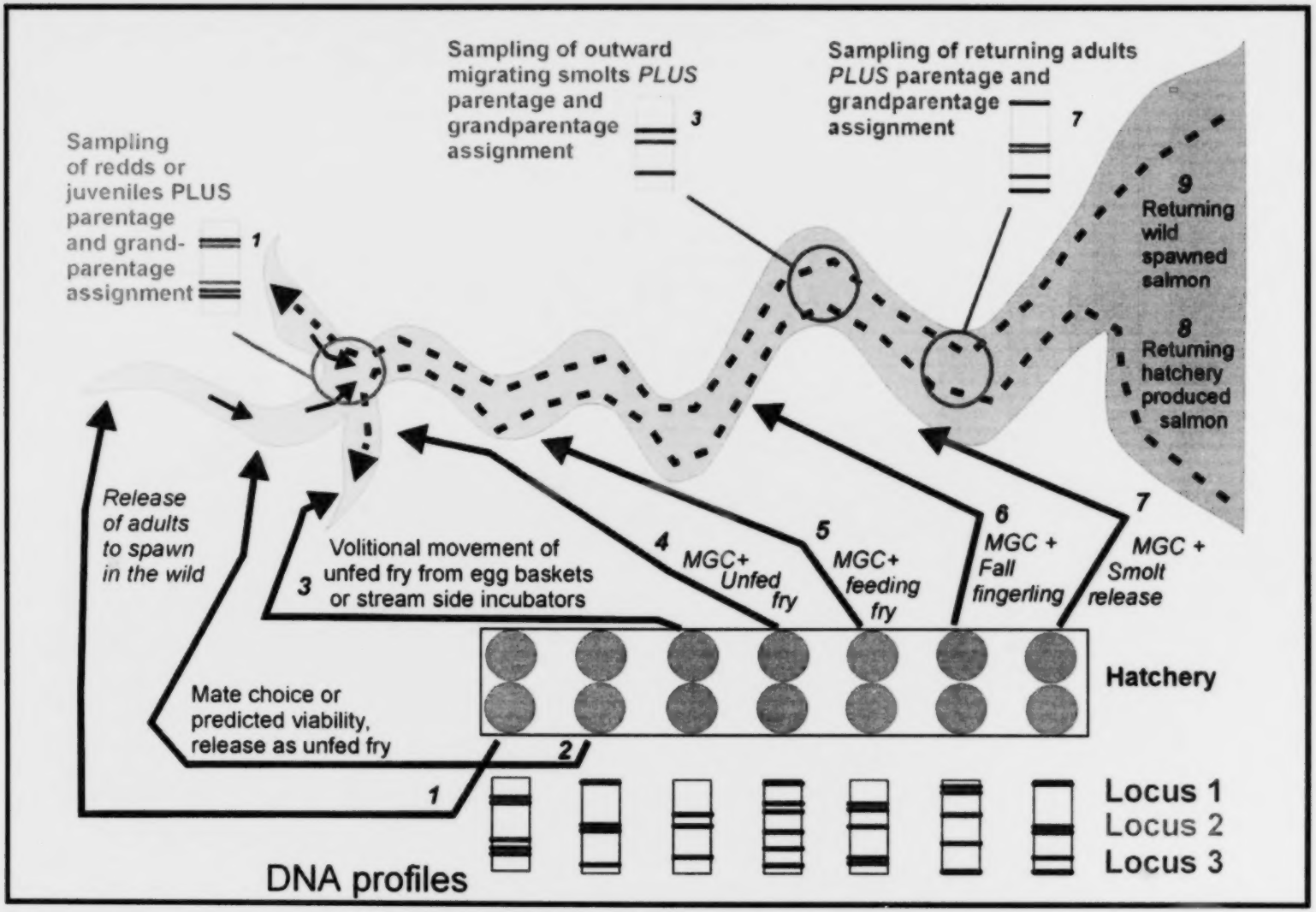
Fam ext= Family extended; Num Ext= number of individuals in Extended family

Fam full= Full-sib family; Num Full= number of individuals in full-sib family

Sample identifier	Type	Fam Ext	Num Ext	Fam Full	Num Full
USR110601SOF016	S01	4	13	3	9
USR110601SOF018	SC1	4	13	3	9
USR180902HODEADPARR	P02	4	13	3	9
USR230801HOUSR012AS2	P01	4	13	3	9
USR230801HOUSR012AS3	P01	4	13	3	9
USR290502HO36	P02	4	13	3	9
USR290502HO39	P02	4	13	3	9
USR290502HO41	P02	4	13	3	9
USR290502HO42	P02	4	13	3	9
USR110601SOF019	S01	4	13	4	4
USR220801HOUSR011AS01	P01	4	13	4	4
USR290502HO32	P02	4	13	4	4
USR290502HO40	P02	4	13	4	4
USR040901HOUSR014AS15	P01	5	5	8	3
USR260802HO013AS01	P02	5	5	8	3
USR300801HOUSR013AS09	P01	5	5	8	3
USR270802HO014AS01	P02	5	5	30	1
USR260802HOS002F001	P02	5	5	31	1
USR210802HOS301	P02	6	9	9	1
USR090601SOF003	S01	6	9	12	3
USR110601SOF011	S01	6	9	12	3
USR230802HOS802	P02	6	9	12	3
USR090601SOF004	S01	6	9	15	3
USR090601SOF005	S01	6	9	15	3
USR090601SOF006	S01	6	9	15	3
USR090601SOF007	S01	6	9	20	1
USR110601SOF009	S01	6	9	32	1
USR040901HOUSR014AS05	P01	7	4	7	3
USR260802HO013AS03	P02	7	4	7	3
USR290502HO38	P02	7	4	7	3
USR290801HOUSR007AS5	P01	7	4	24	1
USR280802HOS804	P02**	8	4	6	2
USR290801HOUSR007AS4	P01**	8	4	6	2
USR210802HOS401	P02**	8	4	17	2
USR260802HOS005F005	P02**	8	4	17	2
USR230802HOS1001	P02	9	3	34	1
USR230802HOS803	P02	9	3	35	1
USR230802HOS801	P02	9	3	36	1
USR260802HO013AS04	P02	10	2	25	1
USR270802HO014AS02	P02	10	2	28	1
USR290801HOUSR007AS2	P01**	11	1	29	1
USR230801HOUSR012AS1	P01	12	1	26	1
USR130601SOF021	S01	13	1	33	1

** partial European ancestry

Proposed research into relative efficacy of alternate management (breeding, rearing, release strategies)


Sampling of outward migrating smolts *PLUS* parentage and grandparentage assignment
3
Sampling of returning adults *PLUS* parentage and grandparentage assignment
7
Sampling of redds or juveniles PLUS parentage and grand-parentage assignment
1
9
Returning wild spawned salmon
8
Returning hatchery produced salmon
Release of adults to spawn in the wild
3
Volitional movement of unfed fry from egg baskets or stream side incubators
4
MGC+ Unfed fry
5
MGC+ feeding fry
6
MGC + Fall fingerling
7
MGC + Smolt release
Hatchery
Mate choice or predicted viability, release as unfed fry
2
1
Locus 1
Locus 2
Locus 3
DNA profiles

Size standards in red
Locus 1 (yellow)
Locus 2 (green)
Big Salmon River
Great Village River

AAROM (Aboriginal Aquatic Resource Oceans Monitoring)
An Overview

Objectives:

- Support the involvement of Aboriginal groups in integrated watershed/ecosystem planning and management processes
- Build capacity in areas including but beyond fisheries management
- Support the creation of new aggregations and the enhancement of existing bodies, where appropriate

AAROM Principles

- Watershed/ ecosystem based
- Differentiated, community driven approach
- Voluntary
- Built on best practices
- Supports conservation and sustainable resource use

AAROM Body Roles and Functions

- The differentiated approach to program delivery, means that the activities of the AAROM bodies will vary from group to group
- These bodies can serve a number of roles depending on the needs, priorities and existing capacities of the group and their relationship with different sectors of DFO
- Accordingly, depending on the wishes of the group and DFO's mandated responsibilities, the AAROM bodies could play:
  - a representational/ advisory role
  - an operational/co-management role and /or
  - pursue other opportunities

AAROM Body Roles and Functions Representational/ Advisory

- An aggregate resource management body with a representational/advisory mandate could:
  - represent member communities in DFO's multilateral processes
  - liaise with member communities and disseminate information
  - provide technical advice to member communities on aquatic resources and ocean management issues
  - provide input into DFO advisory processes on behalf of member communities
  - serve a coordination role for engagement on Fisheries Act and Canadian Environmental Assessment Act regulatory reviews and assessments and on Species at Risk issues

AAROM Body Roles and Functions: Operational/ Co-management

- An aggregate resource management body with an operational/ co-management role could:
  - identify projects, submit projects proposals and coordinate and supervise project delivery on behalf of member communities
  - undertake projects such as fisheries enhancement, stock assessments and habitat enhancement, restoration and protection

- conduct scientific research related aquatic resource and oceans management(studies and reports) in support of member communities interests and:
- provide for monitoring and enforcement activities through the use of Aboriginal Fishery Officers

AAROM Body Roles and Functions Other Opportunities

- ❖ Operational/co-management role could be eligible for contracts under the federal Procurement Strategy for Aboriginal Businesses (PSAB)
- ❖ Some groups may also be eligible for contracts under the department's Alternative Service Delivery (ASD) framework
- ❖ The AAROM bodies may be called upon to play key roles in policy development and implementation (decision making)
- ❖ For example, major policy or cross-cutting issues such as Species at Risk, Invasive species, Marine Protected Areas
- ❖ Furthermore, certain functions will remain at the community level depending on the wishes of the group

Management Structures

- ❖ The management structure chosen will be up to the aggregate group
- ❖ Options include:

corporation, where the body would be incorporated provincially or federally, in accordance with the relevant Acts, depending on the choice of the decision-makers desiring to form a corporate body

- A partnership

Collaborative Management Support

- ❖ Provide qualifying Aboriginal Groups funding to establish a professional resource management body at an aggregate level (AAROM)
- ❖ AAROM will provide funding for:
  - professional personnel (biologist, technologist,or technicians) and administrative support staff
  - office space and related costs
  - computer hardware and software
  - costs related to performing the liaison function
  - Aboriginal Fisheries Officer(s)

Funding will be provided under long-term arrangements of up to five years

Aboriginal Fisheries Officers

- ❖ The AAROM bodies funded under this program will be eligible for funding for the development and engagement of Aboriginal Fisheries Officers (AFOs)
  - AFO's a high priority of Aboriginal groups (AFS review and National review of the Guardian Program)
  - DFO trained and employed, but deployed to Aboriginal groups underDFO command and control/DFO trained and employed by Aboriginal groups with Aboriginal command and control
  - Specific roles and responsibilities to be defined in a multi-year enforcement protocols

Relationship to the AFS

- AAROM will be closely integrated with AFS and is designed to complement not replace or weaken AFS
- The ARROM program is not intended to fund projects, its focus is on facilitating Aboriginal participation in aquatic resource and oceans management processes through capacity development
- AAROM offers the potential for enhanced monitoring and enforcement

Enforcement Report for the 2003 season
SARA Enforcement Strategy for Salmon, Upper Bay of Fundy Rivers.

River Patrols

Our enforcement strategy on the rivers was to inventory each river system as ranked by science for enforcement attention, *(they are Great Village, Shubie, Stewiacke, St.Croix, Parrsboro, Portapique, Herbert, North and Economy)* as to where salmon were seen, where the pools are in the system and where any activity and or access points to the system are located.
This information would later be plotted on a topographic map, building an inventory of the places we need to be on the rivers in the future
River patrols were made during the months of April, May, September and October. The river patrols were accomplished by kayak. The river bottom was scanned for salmon with the aid of polarized fishing glasses. Special attention was paid to pools at the bottom of any fast running sections of river. Attention was also given to access points to the rivers, and any areas that there were signs of activity from the riverbanks.
Basically we were depending on finding salmon to identify, (*if you will*) hotspots where we would need to focus enforcement attention if/when recovery of the salmon stocks return to the rivers.

The rivers that were patrolled are the **Stewiacke, Portapique, Great Village, and Salmon River.** The lack of funds and thus few patrols was disappointing this year, but we are hopeful to complete the mapping project next season.

We found that basing our inventory of the river system on finding salmon was unrealistic, no salmon were ever seen on any of our kayak patrols. We do not contend this means there were no salmon there, but based on our experience of 14 to 15 years ago, when there were lots of salmon, seeing them in the river system then was not a problem.
Our intention is to revisit the rivers and map the pools and rips. Identify salmon habitat where fall or spring run salmon tend to gather, and where they would be at risk.

Our end goal is to have an inventory of locations for each river system, of where we best need to focus our resources in the future, for enforcement attention of both adult and juvenile salmon.

Public Education SARA

With our public education project completed – **Inner Bay of Fundy Salmon**
We have plans to do presentations at the junior high level, grade 8, and will be visiting the schools that ring the Inner Bay of Fundy (East Hants, West Hants, Colchester and Cumberland schools). The presentation will be done over the winter months. We have a power point presentation, poster and brochure. Pens will be handed to all the classes visited with a SARA conservation message printed on them.

Patrols, salmon stocked rivers:

Set salmon free signs were posted on all river systems that have been ranked by science for enforcement attention. *(The signs are part of our public education project a re-make of an old sign on a new plastic type of material)*
About 60 signs posted along the river systems, and they have held up well this far to weather conditions.

The goal is to prevent the intentional and non-intentional *(young anglers that just do not know the difference)* **retention of salmon smolts released in the river systems.**

Commercial Weirs:

Continuation of patrols/checks on the low head weirs of the Minas Basin, as was done 2002.
There were nighttime checks on the weirs, *(this is when the weirs fish the most effectively and the area we have least knowledge about)*. The enforcement effort in 2002 entailed stakeouts on the weirs, but was not that effective *(with the exception of the weir near Parrsboro)* on finding out what was being caught at night.
The approach this year was to be at the weirs first, before the weir fishermen, to find out what types of fish have been caught. We were looking more for salmon smolts in all the weirs, with the exception of the Partridge Island weir. No smolts or salmon were seen in the low head weirs.
The Partridge Island weir did catch 7 adult salmon of which we obtained 5 scale samples (done in co-operation of the weir operator) and the samples were sent science branch.
We are not prepared as yet to say all the low head weirs will not have any adverse affect on recovery of the salmon stocks. The lack of funds and thus few patrols this year, (*a recurring theme*), meant we did not get to all the weirs as many times as we felt required to make an call on that issue.

Our end goal for these enforcement actions is to determine what weir sites do/can retain or catch a salmon. From there we can decide the best approach to correct the problem and where need to focus our resources for salmon enforcement on the weirs in the future.

Recreational Striped Bass fishing:

The conclusion of the effort on striped bass fishing targeted 2002 SARA Strategy was that is was unlikely a bass fisher would angle a salmon during the fall season. Our intention was to do more work on this fishery early spring into late summer when slink salmon returning from the rivers and maybe more susceptible to being caught by a bass angler.

And again for that same recurring theme *(lack of funds)* we are not prepared as yet to say, bass fishers will not have any adverse affect on recovery of the salmon stocks.

Our end goal for these enforcement actions is to determine if striped bass anglers can catch a salmon. And from that to decide if any/or what, efforts are best needed to focus our resources for salmon enforcement on this fishery in the future.

C&P
Parrsboro
A/FS Vince Smith

IBoF Implementation plans relevant to recovery

RECOVERY OBJECTIVES:

1) Harbour and Protect Residual Populations

a. ***Protect existing wild salmon populations***

Progress 2003:

Weirs- patrols checks night time tides/ Fishery officers at the weirs before weir fishers checking catches, checks for salmon smolts in the spring.
Co-operation with the Partridge Island weir, June & July- 2003, 7 salmon reported captured/released, 5-scale samples taken. (Scale samples given to science branch)
About 70 (fishery officer) patrol hours.

Kayak patrols spring and fall, Stewiacke, Portapique, Great Village and Salmon River.
About 240 (fishery officer) patrol hours.

b. ***Protect salmon habitat in freshwater and in marine near-shore environments***

Progress 2003:

Patrols checking fish way passage Minas Basin Rivers
About 23 (fishery officer) patrol hours.

Patrols - habitat compliance checks/forestry operations.
About 75 (fishery officer) patrol hours.

Habitat violation unnamed tributary to Salt Spring Brook, Londonderry-tributary to Great Village River. Habitat disruption logging operation. Daylong trial, logging contractor found guilty, $1000.00 fine, no remedial penalty awarded. Judge felt remedial request, excessive for damage and also took into account natures healing effect in the past year, proceeding trial.

8) Involving all Parties

c. ***Communications network***

Progress 2003:

Public education project completed- brochure/poster/set salmon free poster/power point presentation/article for magazine publications.

Jan/Feb 2004 plans to visit 13 schools, 1400 grade 8 level students, schools around the Inner Bay of Fundy.

Weekend presentation at the Musq. Natural Resource EX. In June, 2003, iBoF salmon brochures handed out to general public/posters to interest groups.
Associations have copies of material, Cumberland River Enhancement Group/ Atlantic Salmon Federation.

Set the salmon free posters, posted on rivers that flow into the Inner Bay of Fundy
Approximately 60 signs posted in May and are holding up to weather conditions.
About 30 (fishery officer) patrol hours.

C&P
Parrsboro

INNER BAY OF FUNDY SALMON RECOVERY STRATEGY

COMMUNICATIONS PLAN

'draft'

BACKGROUND

In 2001, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated Inner Bay of Fundy salmon as "endangered". The collective populations of iBoF salmon have declined by approximately 90 % or more since 1989, and are currently at risk of extinction.

Within the Bay of Fundy, there are two different population assemblages of Atlantic salmon. One assemblage is referred to the "outer Bay of Fundy salmon" and includes populations inhabiting rivers and streams in the western Bay of Fundy, like the Saint John River, New Brunswick. The inner Bay of Fundy (iBoF) salmon population is found in drainages between the Saint John River and Nova Scotia's Annapolis River. It is most likely historically inhabited more than 40 rivers and streams.

There is great interest in a recovery of inner Bay of Fundy salmon. Historically, these salmon populations supported harvesting by Aboriginal peoples, recreational and commercial fisheries. The public regards the species as a barometer of the health of the natural environment.

Both federal and provincial governments have constitutional authority to regulate different aspects of the fisheries in Canada, and therefore, both work together in managing the iBoF salmon resource. The federal Department of Fisheries and Oceans is the lead agency for delivery of the Recovery Program for iBoF salmon.

The Recovery Team is made up of provincial, federal and non-government organizations who have developed a strategy that includes action plans to address the causes of the iBoF salmon decline, restore self-sustaining populations representative of those of the inner Bay, and work with others to deliver the recovery program.

This plan proposes several communications initiatives to increase public awareness and support of the recovery team's overall efforts to restore inner Bay of Fundy Atlantic salmon in the area.

STRATEGIC CONSIDERATIONS

- The communications activities should contribute to increasing the public's understanding of, and support for, the Recovery Team's efforts to restore inner Bay of Fundy salmon.
- There are currently a number of conservation and grass root level groups promoting restoration and protection of inner Bay of Fundy salmon. Efforts must be made to work with these groups to avoid duplication of efforts.

- Communications initiatives should support to the extent necessary, DFO's national strategic plan to *"provide information material to the aquaculture industry; to recreational fishing organizations that might directly affect fish species at risk; to landowners adjacent to waters bearing aquatic species at risk who might inadvertently damage the habitat and pollute the waters of species at risk; and to boaters, particularly the marine mammal watching industry."*

TARGET AUDIENCES

- General public
- Stakeholders
- Landowners
- Media
- Academia (as potential research partners)
- School groups
- ATV users
- Coastal communities

KEY MESSAGES

- DFO is lead agency for delivery of Recovery program for IBoF salmon which has an "endangered" listing by COSEWIC
- The strategy of the recovery group is to protect existing wild populations and their habitat, including establishing live gene banks and captive breeding programs.
- The recovery group is looking at all threats to inner BoF salmon, including freshwater, habitat, and marine survival to determine why the species is in decline.
- If IBoF salmon become extirpated, there will be loss of historic species, Native tradition and culture, effects on other aquatic animals, socio-economic spin-offs,
- How can people help? General public can help by keeping rivers clean, protect habitat, etc.

ACTIVITIES

<u>MEDIA</u>

- A series of regionally and locally-oriented feature stories will be marketed to media, focusing on the Live Gene Banking program. (underway)
- Opportunities will be sought for feature media interviews with science project experts. (Need timelines from science projects)
- CBC Country Canada: a proposal will be written to highlight efforts of all involved in potential restoration of iBoF salmon
- Specific publications – articles written to target specific publications, (eg. Biosphere newsletter, ASF newsletter, Saltscape, Coastal Community Newsletter (NS and NB)

- Biosphere project developed media package to local communities
- Telegraph-Journal insert to include articles on inner Bay of Fundy salmon (tent. January)

PROMOTIONAL MATERIALS:

- FACTSHEET: for the general public on inner Bay of Fundy salmon, the work being done to help them and partnerships formed with stakeholders and other levels of government. This could be a one-pager that could be updated as work progresses. It would also be available on the Species at Risk Web site and partner websites.
- DISPLAY: community display on general SARA species (developed by DFO communications)
- NS AND NB POWER INSERT
- STREAMSIDE SIGNS – Release of salmon parr and ATV river crossing signs
- POWERPOINT PRESENTATION? on planning and recovery team
- WEB SITE – research (needs $ for translation) – adapted for public use?

OUTREACH:

- Seminar series with universities, research facilities
- Gulf of Maine Environmental summit – St. Andrews, October 2004
- Outdoor shows – supporting materials for ASF booth (cost-effective)
- C& P (DFO) and Biosphere School programs

EVALUATION

- Media clippings
- Community presentations/meetings
- Seminars
- School participation
- Post communications survey (Biosphere)

INNER BAY OF FUNDY SALMON

ACTION ITEMS / PROPOSED ACTIVITIES

1. Website – Suzanne to determine if funding available for translation/ applicability to general public and get it up and running
2. C&P school program – Suzanne to look for $ needed for translation
3. Proposal to SARA funding (Arran McPherson) – Suzanne to submit proposal for display at Huntsman Marine Science Centre Aquarium/Museum on all species at risk in Bay of Fundy
4. Telegraph Journal insert (tentative January) – article on IBoF salmon initiatives (will either be written by DFO Communications or interviews will take place)
5. Power Corporation inserts for NB and NS – to be further pursued
6. Mactaquac Biodiversity Facility – Suzanne and Carl Myers to work with Trevor Goff re: media coverage (Dec)
7. Country Canada – team to develop proposal (storyline/pitch)
8. SAR display for communities – possibly to be developed by DFO Communications – need supporting materials. Committee to define existing materials and look at ones needed.
9. Need timelines from science projects to determine communications opportunities
10. Meet to determine activities/products for 2004-2005 fiscal year to develop proposals for funding. (Dec. 9 teleconference)
11. C&P Fishery Officer Wayne Simonds – looking for funding to place signs on river crossings to alert ATV drivers of the possible damage to fish habitat.

Monitoring and Research

Proposed activities for 2004

Data and analysis

- Continue historic data input
- Complete recovery potential and reference points paper.
- Complete CH modelling
- Complete scale analysis study
- Begin threats analysis modelling

Field work...

Smolts

- required to proof freshwater habitat production,
- evaluate LGB storage approaches,
- collect LGB fish,
- provide smolts for research,
- Target rivers for 2004:
  - Big Salmon River
  - Stewiacke River

Electrofishing

- wide area sampling not needed for 2004,
- continue long term sampling of 11 rivers,
- re-evaluate BSR sampling strategy

Adult salmon monitoring

- Big Salmon River,
- Gaspereau River
- Rivers of opportunity (monitoring to be notified by C&P and local collaborators when fish are observed)

Long term projects - Freshwater

- No significant gains in recovery for re-definition of s/r parameters.
- Note the lack of a s/r monitoring location for a Minas Basin iBoF population,
- If capture is required then...Great village River is good combination of economic, physical and co-operative location for two way monitoring
- Smaller rivers e.g. Portapique, Folly could be assessed with indirect methods at lower cost and resolution.

Long term projects - Marine

- Based on modelling, marine research is a high priority in order to move from maintenance to recovery.
- No actions in tracking or trawling in 2004 (waiting to see data and analysis) however, a team could be formed for project development.
- Propose smolt viability study coupled with toxicology study for 2004.
- Propose r&d for smolt tagging with metalic detectable tags and with floating radio tags.

ATK Survey

Between August 13-16, 2002 sixteen band members (elders) from Acadia First Nation were interviewed to document their knowledge of and personal experience with whitefish in the SW Nova Scotia.

The number of interviews per reserve were as follows:
9 from Yarmouth
6 from Shelburne
1 from Wildcat

In total 2 reported knowledge of 'whitefish'

Yarmouth (n =1)
One band member reported having angled whitefish ~50 years ago in Kemptville area (8-14 inches). This person's recollection was that the fish were between 8-14 inches (20-35 cm) in length.

AWC&RT, NSPI-HSP, and archived lake survey data all indicate that lake whitefish occur in the Carleton River lakes in the vicinity of Kemptville.

The eight additional band members interviewed were aware of Atlantic whitefish but had not seen one.

Wildcat (n =1)
One band member reported having caught 'Atlantic whitefish' 12-16 inches (30-40 cm) in length ~60 years ago on Wildcat and Medway rivers

The reported length range is greater than that associated with lake whitefish sampled from lakes in the Medway system.

Note: None of the elders interviewed were aware of a Mi'Kmaq word for whitefish. However, one needs to consider that few band members any longer speak Mi'Kmaq.

A summer student completed this survey last year. There were only two respondents who knew of Whitefish (no distinction between Lake and Atlantic), and there are Lake Whitefish in the area of the first respondent, therefore we can't really draw a conclusion as to the presence of Atlantic Whitefish.

Atlantic Whitefish Recovery Team
Communications and Public Awareness Sub-Committee

February 3rd Conference Call Minutes (first meeting)

Present: Jason LeBlanc, Jill Comolli, Gary Selig and Ken Meade, Carl Myers, Dan Hasselmam, Lynn Cullen

Draft agenda

1. Communications needs by watershed area
2. Best method of reaching audiences
3. Products/initiatives
4. Messages
5. Proposed timelines for delivery
6. Funding sources/resources

Additional items-

7. Stewardship and community capacity building
8. Communications role of other committees (habitat watershed)

Communications Products

- Ken Meade provided information on the N.S. Power HSP communications proposal to build local Tusket community capacity and increase local awareness of Atlantic whitefish (with TREPA, Tusket River Environmental Protection group). Plans are to produce a leaflet/poster to summarize what is known about Atlantic whitefish, habitat conditions, threats to limit reintroduction etc.
- There was confirmation that the Atlantic Whitefish fact sheet would be reprinted.
- There was discussion on the poster, (produced by John Whitelaw and Arran McPherson) and whether it was complex for general public posting. It was felt it was too complex for general public.
- Dan indicated that he had posted the "Have You Seen This Fish" poster in a number of localities in and around the Petite Riviere watershed area.

Engaging local stakeholder groups

- Discussion on a priority in getting more involvement of key local stakeholders (i.e. Watershed Management Assoc, Petite Riviere Watershed Association ,Town of Bridgewater, Bass anglers, Peter Bell…
- Carl agreed to get information from Larry and Rod on any plans of other recovery sub-committees on public awareness activities, to ensure coordination.

Watershed Communications

- There are differences in the issues in each watershed area. But, there are cross over information areas and there is value in Tusket citizens knowing about conditions in the Petit watershed, where the fish still reside.

Media

- On the issue of inserts, there is a reporter with the 'Lighthouse Log' (Jody Turner) who could be contacted to do a series of (free) articles on whitefish. Community newspapers are considered a valuable route to citizens, and should be utilized. There may be messages we may wish to get across that could require advertising costs, but we should first engage reporters. Earth Day in April was noted as a possible target date for a feature article on Atlantic Whitefish.
- Local radio (CKBW) has a local program called "South Shore Sunday Morning" that may be a good route to get coverage.
- If, there were funds available in this fiscal year, an insert/advertisement with general information would be a good project. Target publications would include the Lighthouse Log, Bridgewater Bulletin, Vanguard and Courier Nouvelle-Ecosse. Topics could include information on their status as endangered, where the fish are found in the Petite watershed, where they once were found in Tusket, what they look like, what people can do if they come across the fish.

Reaching the Local Community

- While participation may be small, there is value in having a number of local education days held on Saturdays.
- It would be desirable to get more community groups and schools to visit Mersey to see what is happening to save the species. But, there is limited opportunity for visits to the Mersey Facility, since staff are quite busy. Potential opportunities should be looked at with Biodiversity facility staff.
- There would be value in seeking the support of local community groups, (with a stake in the health of watershed stocks) to discuss events/opportunities to reach larger numbers in the community.
- Exhibits in malls may not reach many citizens, unless they have something visual of interest or lure in mall traffic. Displaying live hatched fish was not seen as viable in portable mall exhibits, since they are not as hardy as some fish and would be affected by handling and less than ideal storage.

Web Site

- Establishing a web site with information on Atlantic Whitefish, projects and watersheds, is a priority to reach the community and youth. But, to be effective it would need promotion/exposure. There was discussion over where it would reside. Lynn Cullen agreed to look into putting it on a MASARO, DFO site.

Visuals

- Dan mentioned that there is a fairly good amount of visuals available. He has transferred all of the video, taken by Bob Semple into digital format (Quick Time) and has received confirmation that they could be used on web-site, (subject to giving credit, and prior approval of visual usage).

Youth/schools

- Youth/school initiatives are desirable and reaching youth is important. A teacher's guide (grades 5 to 9) to be used for local classes is desirable, because it is difficult to get people to visit school classes. A list of those available to visit schools to support an education initiative is needed. Information on what has been put together for schools for other endangered species (i.e. Peter MacDonald and Piping Plover) would assist. Need to discuss classes with school board Dept. of Education Science representative what would be appropriate for schools.

Promotional products

- There is value in producing promotional products to pass out to support communications initiatives with citizens and students. One possibility raised was fridge magnets with Atlantic whitefish information (i.e. opportunity to promote website).Water sample testers were raised as a possibility to encourage and engage local youth.

Timelines

- We should have a rough plan ready for the April Recovery Meeting
- Conference calls seem to be best route to communicate at this point
- We need to find out what the timelines are for re-introductions in order to assist in any communication activities aimed at the public – we would like to inform the public in advance of the work.

Atlantic Whitefish Recovery Team
Communications and Public Awareness Sub-Committee

Conference Call Minutes April 2 (second meeting)

Present: Jason LeBlanc, Jill Comolli, Gary Selig, Ken Meade, Carl Myers, Dan Hasselmam, Lynn Cullen

Draft agenda:

1. Acceptance of Feb. 3rd minutes
2. Call for updates
    - Promotional items, magnets-Carl
    - Fact Sheet - Jason
    - Leaflet/poster-Tusket, Ken
    - Newspaper ads - Carl
    - Website - Lynn
    - Schools/youth-
    - Community Capacity building, outreach and Stewardship (Tusket and Petite Riviere)
    - Media relations/contacts – Carl
    - Visuals (pictures, video)
    - Update on other sub-committee
3. Developing a communications plan and accessing funding sources
4. Approach to brief committee at April 10th meeting
5. Where to focus over the next few months

Acceptance of minutes of Feb 3rd meeting

Minutes accepted as final - no changes.

Call for updates

- ***Promotional items, magnets-Carl***

2500 Magnets have been ordered and delivery is expected mid April. The magnets will be available for RT to distribute as required to schools, special interest groups, etc. The Species at Risk Coordination Office will keep the magnets on their shelves and distribute. See Annex A for an image of the magnet.

- ***Fact Sheet – Jason***

The 'Nova Scotia Fish Series' fact sheet has been printed and is ready for distribution and ~ 2000 copies will be brought to the RT meeting on April 10th. This version will contain a photograph of the whitefish along with the artwork that was used in the original sheet. Jason

LeBlanc will house the fact sheets. There was a question regarding the information in the original fact sheet as to distribution in the LaHave River - is this correct? Jason will look into this. It was suggested that the fact sheet could be used for general education projects, although not on its own, as it is too detailed. We should target the watershed area for distribution of the fact sheets. It was suggested that we try and develop some sort of brochure that is more 'timeless' and general.

- ***Leaflet/poster-Tusket, Ken***

  Project is still planned, however Ken has yet to hear if the proposed project has been funded (HSP).

- ***Newspaper ads – Carl***

  We were unable to do this for FY 2002/03 due to time constraints. This will be a priority for this FY (03/04). Question asked whether we wanted to focus this around Environment week? Not sure if putting an advertisement out during that week would be a good idea - it may get lost in the shuffle. Suggested that it would be better to do this as a stand-alone. Perhaps when fishing season starts? Noted that EC will be doing something for SAR during Environment week. It was suggested that it would be good to provide cottage owners in the area the same information as they usually aren't around during the start of fishing season. Noted that the add will be a general information piece. It was suggested that we provide contact information for those who may want to become involved in recovery efforts. We will seek feedback on this from the RT.

- ***Website - Lynn***

  We need a consensus of what we want on the site. Do we want it RT based or just information on the species? Noted that the DFO Maritimes Species at Risk website is being updated to include more information on Whitefish, which will include recovery information and links to other pertinent/related information. DFO is willing to accept funding proposals from the RT if they want a site dedicated to Whitefish, however, the site would need to be bilingual if it is funded by DFO. Note that due to the uncertainty of funding for Species at Risk (DFO Maritimes), it is unlikely any funding decisions will be made until sometime in June.

- ***Schools/youth- Carl/Gary***

  The Desbrisay Museum is in the process of finishing up a Teachers Kit on Species at Risk for distribution in ~ 50 Southwest Nova elementary schools. The kit will include information on Whitefish. The information contained in the kits will be at an introductory level and will be focused towards grades 3-6. These kits can be used by teachers, museums and others. It is planned to launch the kits at the beginning of the next school year (Sept. 2003). Carl will be meeting with Marilyn Webster (Dept. of Education) to discuss various issues and it was suggested that we ask her to sit in on one of our calls. She may have funding for something we might want to put into the schools.

- ***Community Capacity building, outreach and Stewardship (Tusket and Petite Riviere)***

  The Petite Riviere Watershed advisory group has been contacted and invited to participate in the RT meetings. John Gilhen has attended several of their meetings as the RT representative. The town of Bridgewater has been involved at our meetings and are aware of recovery initiatives. They have participated as much as possible when required. It was suggested that we try to get a good sense of interested groups so that we are able to distribute the various products that we have/may have. Agreed that the local area (naturalist groups, watershed groups, homeowners, cottage owners) needs to be our focus on information dissemination. Suggested that it is a priority to have a brochure for the Petite area. Noted that it would be nice to have timelines from the RT to allow for timing of communication initiatives (discussed during our last call). Also suggested that we time our activities with any other complimentary communication initiatives. Suggested that we contact the watershed group to get them involved with our group (communications).

- ***Media relations/contacts – Carl***

  Carl has contacted the science editor of the Chronicle Herald who will in turn contact the Bridgewater office of the Chronicle Herald to get something going for the Science Page - this is usually published on Sundays and tends to get a greater audience. This hopefully can be done sometime in April so the reporter can go to the hatchery. It was mentioned that we should try and get something done with CKBW. Suggested that we contact Brian Medel to have him do something, noted that he has done some work with the Province. Carl noted that in order for the Chronicle Herald to do a 'general' piece, it usually needs to be hard news rather than informational, that is why the science editor was chosen. There was also a suggestion to have the CBC show "Land & Sea" do something on the Whitefish. This is a good idea as it would allow a National focus on the species. If we are going to get them involved now would be the time to do it, prior to any re-introductions, so that the background information is there. Carl will contact them as well as Country Canada to see if the interest is there.

- ***Visuals (pictures, video)***

  There has been a proposal by EC, Parks and the Province to house a Species at Risk display at Shubenacadie Wildlife Park. It would be nice to have something for this (ie a Whitefish in an aquarium). Jon Stone of EC has asked for a tour of Mersey to see what could be done/used for this initiative.

- ***Update on other sub-committee***

  An action item arose from the last RT meeting which we would like to have an update on - ***(Action: Mark Elderkin with Rod Bradford and John Gilhen [volunteered in absentia] to strike a sub group to begin planning a proposal to meet the needs of the municipalities for '04-'05.)*** - Not sure if this has been started or not.

Developing a communications plan and accessing funding sources

Carl will develop a draft communications plan and send to the rest of this group for comments, additions, etc.

Approach to brief committee at April 10th meeting

Carl will provide a summary of activities to the RT, ask for key timelines, alert as to where we are and were we would like to go, and provide a 'draft' communications plan.

Annex A

Recovery Objectives and *ACTION PLANS* April 11 and Nov 29, 2002 (with reporting on action items April 10, 2003). *(where FS'03 = Field Season'03)*

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
A. Conservation and Restoration of Atlantic Whitefish Populations *			
1. Planning for in-situ (on site) conservation and recovery	• Planning complete; review of fish culture practices and requirements identified and a document is planned for tabling at the fall 2002 meeting *(Action: John Whitelaw)*. This also covers 2 & 3 below. • Deliverables are associated through b-d	• Oral presentation only; live food (*Artemia sp.*) suspected for heavy mortality wk 3 & switching to dry pellet. 43 wild brood fish (spring angled), 150 age 1^+ & 100 age 0^+ on hand. Potential for 30K eggs in Dec '02. First releases anticipated Nov '04. ***(Action: John Whitelaw to update Apr'03.)***	• 8-10K eggs on hand - likely will hatch within 1 week; 150 two year olds and 100 one year olds on hand; 33 wild broodfish on hand - lost 10 since November - possibly due to swim bladder regulation problems - testing currently being done. First releases now not anticipated until November '05 rather than '04. Pedigree work on hold due to lack of secure funding. ***(Action: John Whitelaw to provide report on mortalities Sept. '03) (Action - John Gilhen to draft RT letter to Ottawa (Minister or DM) stating that science setbacks in face of invasive spp. Are crippling to the program. COMPLETE - see attached)***
2. Planning for ex-situ (off site) conservation fish culture	• NSP's HSP project (Tusket) will contribute *(Action: Ken Meade)*	• HSP final report (18 lake surveys, fish assemblages and H_2O quality) available **Apr '03** ***(Action: Ken Meade)***; HSP FS'03 to address fishway monitoring and community outreach.	• Completed, one copy provided for RT records. ***(Action - L. Cullen will obtain electronic version for distribution to the entire team - COMPLETE).*** HSP '03 to include education and outreach that will target communities within the Tusket River watershed & water quality monitoring throughout the Tusket River watershed: ***fishway monitoring*** was not supported by HSP.
Planning for stock restorations (using fish produced conservation fish culture) (a) public consultations	• Preliminary - science foundation is being developed and a component of 1, 2 above. • Not undertaken but planned for 2003	• • ***(Action: RT/ Communication. Subc. Apr '03.)***	• • On hold (See # 3 of Minutes)
(b) experimental	• To be included in above	• See C2f physiology with auto titrators	
(c)operational (contingent on (a) & (b))		• 2003 NSPI HSP application: build capacity for long-term monitoring of reintroduced Atlantic whitefish population.	• Monitoring portion of NSP-HSP not funded. ***(Action: J. LeBlanc to provide bullets for inclusion into this Appendix re: what will be done under HSP - COMPLETE)*** Title of Project: The affect of smallmouth bass seasonal habitat and prey preferences on endangered Atlantic Whitefish **Appendix I** the project addresses 3 key elements of

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
			the Recovery Strategy: (1) Habitat Conservation, Protection and Management, i.e species-species interactions via predator-prey management, (2) Stewardship and (3) Education and Outreach. **Appendix I** project will focus on smallmouth bass population in Hebb, Millipsigate and Minamkeak and may be expanded to assess population in the other 6 six lakes in the watershed that contain smallmouth bass **Appendix I** survey and inventory bass nesting areas and prey preferences in an effort to better understand interactions between bass and whitefish **Appendix I** develop relationships with community based organizations to foster increased awareness of issues associated with Atlantic whitefish recovery - develop brochures highlighting the potential impacts of illegal introductions of non-indigenous species.
Contingency planning	• On-going; to be based on new info from ATK and NSP/HSP *(Action: RT when new info available.)*	• ATK survey Acadia FN completed: no prior knowledge ***(Action: R. Bradford to provide summary report Apr '03.)***	• See Appendix F for Summary table.
B. Species and Habitat Conservation, Protection and Management			
1. Species Conservation, Protection and Management	• Species name now legally changed allowing for more effective protection.		
(a) regulatory protection of whitefish and management of associated fisheries	• (a) April 1-June 30 closure to all angling extended in 2002 to all 3 main lake systems and thoroughfares on Petite until further notice. Recommended that the Province and DFO meet prior to the fall RFAC meeting to consider RT's recommendations for changes (ref mid Oct note to RT in Apr 11 Minutes "Next Meeting". Noted that regs are interim until SARA comes into effect at which time SARA will be the regulatory tool. *(Action: Greg Stevens and Jason LeBlanc.)*	• April 1-June 30 closures to all angling were extended in 2002 to all 3 main lake systems and thoroughfares on Petite until further notice. Letter written by G. Stevens to RFAC.	• Same as 2002; signs up and legible. Mike offers assistance in accessing area for science endeavors.

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
	• Suggested that it would be nice to have a report from C&P as to what patrols, where/when *(Action: Ian Marshall to initiate?)* • Noted that there was a report of a whitefish caught on the Petite? No enforcement action was taken. *(Action: Bev Davison will follow up re: report by a Town of Bridgewater employee.)*	• More time purported to have been spent on Atlantic whitefish than salmon. ***(Action: G. Stevens to request number of patrols and hours Apr '03.)*** • Completed Apr'02.	• ***(Action: G. Stevens will acquire more information on this and report back to RT. COMPLETE - no response to date from Liverpool Office)***
(b) predator-prey management	• Province has plans to investigate growth characteristics of bass populations in Andrew and some of the other head water lakes which may provide base information on population status and assist in obtaining HSP funds in subsequent years. *(Action: Jason LeBlanc).* Regulations are inadequate to deter introductions of exotic/invasive species (chain pickerel are likely a serious threat; smallmouth may be less so. • Suggested that RT make a formal plea through DFO (annual regulatory plan) to bring this issue to the table – *(Action: Greg Stevens to draft letter from the RT.)*	• Netting survey completed on Andrew L. Smallmouth bass found; aging and probable date of access to be provided. ***(Action: NSDAF [Jason LeBlanc] report for Apr'03.)*** • NSDAF to draft HSP proposal for fish assemblages in other Petite lakes for FS'03. • Ref Minutes: proposal to amend Maritimes Provinces Fishery regulation to prohibit the transport alive or without a licence. Will take at least 8 months. ***(Action: G. Stevens to report progress Apr'03.)***	• Growth analysis done and it is likely that bass intro's to Andrew Lake was 1994. • Completed. ***(Action: J. LeBlanc to provide a summary of proposed work ($32k) to Lynn for attachment to these minutes. COMPLETE*** • Completed. Letter to DFO RDG sent - See Appendix G. Consultations with some of the provinces and an Agreement is ready for finalization. Shellfish will be excluded, as well as any existing licences. Draft of "Regulatory Impact Analysis" provided. ***(Action: RT to provide G. Stevens with any feedback on this draft by May 1st - COMPLETE)*** Note - this will not take effect before 2004.
(b) predator-prey management *(cont'd)*	There was also a suggestion that DFO may have inappropriately dealt with a past incident of "smallmouth" in the tidal waters of the Petite *(Action: Pat Patten will bring forward an old request to DFO to revisit the regulations for SMB – Action completed and found to have been striped bass rather than smallmouth bass).*	• Completed.	
Appendix I Habitat Conservation, Protection and Management (a) watershed and site specific habitat quality management	• Information from NSPI/HSP Tusket project will be used as a basis for habitat mgmt. • No extensive work being done on the Petite.	• Final NSP/ HSP report available Apr'03. ***(Action: Ken Meade.)*** • Invite Town of Bridgewater to present information item on Town's water quality database and monitoring program. ***(Action: co-chair TLM Apr'03.)***	• Completed. Electronic copy to be made available & sent out by MASARO office. • Deferred until next meeting. ***(Action: Mike Fox & Rod Bradford to summarize and present synthesis at fall meeting. COMPLETE)***

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
(b) important habitat protection and management	• Essential to develop plan • More information is required but is coming. • Two levels of habitat that need to be described under SARA – Critical Habitat & Recovery Habitat – this needs to be done by RT. Suggested to review at fall meeting after more clarification is received as to what CH and RH definitions are. *(Action: Rod Bradford attending a CH workshop in two weeks time and with Mark Elderkin will make recommendations for further action at fall meeting.)*	• Matters unresolved. ***(Action: Rod Bradford to report on DFO Science CH workshop M'tl in December and with Mark Elderkin will make recommendations for further action at Apr'03 meeting.)*** • Jill Comolli requests RT to post cautionary note re: habitat alteration if new site is to be chosen for replacement bridge across lower Petite R. ***(Action: Mark Elderkin to call Kim McNeil.)***	• ***(Action: R. Bradford & M. Fax to meet and then bring plan to next meeting)*** • Awaiting "product" from workshop (Rod not at meeting). There is a move to identify CH which will enable funding from all sources - suggested that CH be worked into proposals for funding. • Complete - J. Gilhen was in contact with K. McNeil and there will be a new bridge, but not in the immediate future. RT concerns were voiced with Ms. McNeil.
(c) Habitat restoration (e.g., fishways)	• NSP installed fishway at Raynardton 5 years ago, which is relatively ineffective at low flows. Passage will be examined in 2002 to see what can be done with minor improvements scheduled for 2003. *(Action: NSP to plan and adjust for low flow effectiveness.)* • Operation of Lake Vaughan fishway (at the dam) was extended for one month in 2001 on a trial basis with the suggestion that operation in Dec/ Jan should be considered. • Rod Bradford has made internal request to DFO, to examine a Petite River site for combined fish passage and assessment facilities *(Action: Rod Bradford to report on possibilities in the fall.)* • Acidification: no specific projects on the books. • Green belt legislation: new Provincial 'stream protection and watercourse regulations' are in effect – for all lands, not just Crown lands	• NSPI has identified potential improvements for 2003 • NSPI will extend operation of the Tusket fishways should the presence or reintroduction of Atlantic whitefish warrant it. • Fishway for run-around at Crousetown still on the books but resources not available. • Overview of Clair /Dennis /Amiro pH and calcium projections via "MAGIC" to be made available Apr '03. ***(Action: Co-chair TLM.)***	• No new info, construction permits not yet approved Window to be based on spawning schedule at Mersey. De-watering should have been in Jan. not Nov. ***(Action: Carys to confirm.)*** The Lake Vaughn fish ladder operation is to be re-visited when further evidence shows fish presence. At the moment it is shut down during November due to icing conditions • There may be funding available through Habitat Mgmt for Crousetown. It was agreed that Habitat Rep needed on RT - noted that they have been invited to participate. ***(Action: RT pursue any construction options that may be available.)*** • Complete - See # 6 in minutes
3. Stewardship			
(a) Aboriginal people	• ATK: tried and will try again. *(Action: Jeff Purdy to coordinate-see Apr 11 Minutes.)*	• Acadia FN student with DFO completed survey, ref A4: yields no knowledge.	• See R. Bradford's presentation (Appendix F)
(b) Private sector, including industry	• nothing done yet; Bowater and Irving suggested as untapped resources.	• Bowater biologist Johnathan Kierstead to be contacted. ***(Action: address to be provided to***	• Complete - J. Kierstead invited but sent regrets - another commitment - will attend meetings in future.

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
	• Suggested that an HSP proposal be developed to acquire a "Recovery Co-ordinator/ Facilitator"; another approach might be a 3rd party application for a DFO intern. *(Action: Rod Bradford and Mark Elderkin will propose TORs for a position in 2003.)*	***MASARO by Bev Davison.***) Michelin? • No directed action for '03; community-based HSP proposal for Petite R. to be developed for '04. ***(Action: Mark Elderkin to lead with Rod Bradford and John Mills)***	• This is ongoing and moving forward incrementally with two people being hired by NS DNR to assist in implementation.
(c) Non governmental organizations	• Currently data is being collected by TREPA	• pH & fishing derby data on Coastal Plains Flora web site (Tusket &TREPA). Petite water monitoring data on BACAP site (Bluenose Atlantic Coastal Action Plan); Brooke Cook is contact.	• NGOs working on developing a management plan on the LaHave but nothing for the Petite. • Town of Bridgewater to acquire capacity for water quality monitoring
(d) Commercial and recreational fishers	• Consulted with recreational fishers on the closures. Commercial fishers have been consulted with and re-enforced by TREPA but further consultations need to be done. *(Action: Greg Stevens & Ian Marshall to meet with Peter Bell and ask that he move his trap(s) outside Mercer's Bar, Petite Estuary)*	• Berth and gear moved outside Mercer's Bar.	•
(e) Shoreland owners	• TREPA has done and the work is ongoing. In the process of talking to students within the South West Nova School Board	• Municipalities should consider long term future use of lands adjacent to lakes, e.g., Fancies L.	•
Appendix I Watershed Management - Shoreline and Waterway Conservation	• Not much done, requires more comprehensive approach; would be an opportunity for a Recovery Coordinator/ Facilitator.	• Apply potential of 3b (HSP initiative).	
Appendix I Municipal Planning Units Tusket	• Town of Bridgewater has been involved in meetings and has agreed to advise if anything being done is of concern to the RT.	• See 3b.	
Petite	• Suggest that we invite someone from Yarmouth Municipality to participate on RT. *(Action: Ian Marshall to contact the appropriate individual and invite participation.)*	• No action taken. Suggested contact is Leif Helmer, NS Dept Environment & Labor. ***(Action: Mark Elderkin to notify of April meeting)***	• No action taken. Suggested that we submit a general request to the municipality of Yarmouth and clearly indicate why we want their participation. ***(Action: L. Cullen will draft a letter on behalf of the RT - COMPLETE)***
Appendix I Crown Lands (NSDNR), Building and Development (NSDOE)			
(c) Federal & Provincial Parks, Park Reserves & Protected Areas Tusket			

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
Petite **Appendix I** Private stakeholders Tusket *Petite*			
C. Monitoring and Research	*(Action: mostly either DFO or NSP)*	***(Action: mostly either DFO or NSP)***	
1. Population Monitoring **Appendix I** non-intensive population counts anadromous populations *Tusket*	• Tusket (anadromous) salmon trap in fishway at lake has been modified to capture whitefish and will be operated by *NSP Oct/ Nov, 2002.*	• Fish ladders' traps operated September 23 – November 14, 2002; no Atlantic whitefish captured. • 2003 NSPI HSP application: build capacity for long-term monitoring of reintroduced Atlantic whitefish population. • No AW captured; results to be in final HSP report ***(Action: Ken Meade Apr'03).*** DFO considering electrofishing & reclamation of Annis from chain pickerel FS'03.	• This portion of HSP proposal not approved • Report provided. DFO hoping to complete fish assemblage info although no electrofishing boat. Idea is to assess feasibility of recovery in absence of chain pickerel.
Petite	• *Petite* anadromous component unknown but is high on the list for restoration.		
land locked populations *Tusket*	• Tusket (land locked) 20 field days of gill netting and seining survey planned on lakes by NSP/HSP in 2002.		
Petite	• *Petite* (land locked) broodstock collection information in April May continues to be the information base; data collection at other times of year is not viable.	• 36 wild broodstock collected in'FS'02; DFO considers fall trap and spawner assessment in FS'03.	• DFO is ready to do this work; however, in the absence of funding, capacity is lacking at Mersey. ***(Action: DFO to consider all options.)***
(b) intensive population counts	• nothing planned due to past lack of success	• Lake shore spawning surveys suggested for '03.	• This will not be done in '03
(c) radio-telemetry	• nothing planned in 2002, but by 2005 at the earliest, use of hatchery-released fish will serve to reveal behavior and habitats. WWF ESERF could be potential source of funding.		
2. Research (a) Historical distribution **	• ATK – will attempt to gain the information (see B-3a)	• Project completed by Acadia FN student; no prior knowledge of "whitefish". Report to be tabled Apr '03 ***(Action: Rod Bradford).***	• Completed. Rod gave a brief overview, summary tables Appendix F.
(b) Habitat quality and quantity	• Tusket: year 2 of NSP/HSP project in 2002, monitoring	• HSP Report forthcoming Apr'03 ***(Action: Ken***	• Completed and electronic file distributed in advance

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
	of fishways, habitat quality (water quality: in situ recording @ 23 sites; 4-5 LRTAP sites but less frequent than in 2001, and invertebrate surveys). Water quantity, stream habitat, electrofishing surveys will be done in '02 (not done in 2001 due to fire ban). • Petite: NSP to continue pH monitoring in 2002 with present and historical database being made available to MAGIC. Also limited fish assemblage data. *(Action: NSP progress report this fall.)*	***Meade).*** • HSP application being made in '03 with stewardship water quality and fishway automatic monitoring components	of Minutes • NSPI-HSP Water quality: monitoring of acid toxicity conditions, which constitute a threat to the potential reintroduction of Atlantic whitefish, and will build on the existing time series to provide an index of acid toxicity conditions. The objective will be to complete both in situ water quality surveys and laboratory analyses of water samples as well as a habitat index report.
(c) Genetics	• Assuming one founder stock for the province, all adipose clips will be provided to Arran McPherson (DFO) for extraction of DNA to assess genetic fitness & determine pedigrees. Additionally, need to address the issue of genetic difference between lake and Atlantic whitefish. Have lake whitefish samples from 4 lakes and are targeting another 10. *(Action: DFO Interim report expected this fall.)*	• Atlantic whitefish from Petite Lakes and Lake whitefish samples from 14 lakes in CB and mainland NS provided for genetic analyses. Analyses ongoing and report expected in Apr'03 ***(Action: Arran McPherson.)***	• Presentation given - see Appendix H for summary of preliminary findings.
(d) Health, including diseases & parasites	• Have not been very aggressive in scrutiny of wild caught fish. From now on first priority for mortalities (prefer fresh frozen) is to send to Fish Health Lab (Ann Margaret, DFO, Moncton). *Reports from FHL can be summarized for the fall.* J. Gilhen would like to have a collection of all life stages of whitefish. *(Action: John Whitelaw. Will find out from Ann-Margaret where the fish go after testing.)– (Action: John Gilhen will provide us with a prioritized list for what should be sent to museum)* • Each mortality is given a unique marked/ identification	• Only report to date is for larval deaths in '02, which indicated a microbial overload resultant of live food decomposition. • Prioritized list to be provided Apr'03. ***(Action: J. Gilhen)***	• Not complete ***(Action: J. Gilhen will provide a list after Rod, Dan & John assess what is available, and what the museum can house - COMPLETE).*** NS Museum has specimens at the ARC (SABS) & BIO. • Any mortalities/samples need to be frozen and fin clipped (for genetic work). The only AW specimens are from the Petite.
(e) Nutrition	• No new work planned; literature review relevant to culture practices is underway and can be drawn together *(Action: J. Whitelaw to incl. In fall review of hatchery practices report)*	• No documentation provided; dry diet to be used in '03.	
Life cycle history, behavior	• Hasselman M.Sc. thesis on identification of all life stages, revisions of larval keys and discriminate analysis of taxonomic data between AW, and LW	• Thesis to be completed by March '03. Overview to be presented to RT Apr'03. ***(Action: D. Hasselman.)***	• 1st draft submitted to R. Bradford and is currently being edited/revised. Defense will be in mid to late May.

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
and physiology	targeted for March 2003. • Physiology: pH, temperature and salinity tolerance tests on mainly juvenile stages will be done in 2002. Some testing will be done on age 1+ fish. Literature search has been done and is ongoing. *(Action: DFO to summarize acquired experience on three age groups for fall meeting.)* • Life-cycle history studies ongoing hybrid viability is an issue that hasn't been examined. DFO intends to obtain lake whitefish from the Medway system, screen for disease, take to Mersey and cross with AW. Resultant tissue and DNA analysis will be used to test assumption of AW being an evolutionary spp.	• Exploratory trials done using a limited number of 3-week larvae in several pH 4-5 graded containers but without titrators. Experience using titrators for pH salinity and temp on '02 year class to be tabled in Apr'03 ***(Action: John Whitelaw.)*** • No action to date; issue remains a priority for fall '03.	• Work has only just begun on this. Preliminary data from '02 will be tabled at fall meeting. ***(Action: J. Whitelaw).*** Titrators available for '03 but person power is lacking. • Work will be done this fall using male and female Tusket Lake whitefish so as to determine consequences if AW reintroduced to Tusket.
D. Communication and Education	***(Action: Inter co-chair to activate Sub-Committee)***	• *"Results" oriented Subcommittee led by Carl Myers to be convened in Jan '03*	*Subcommittee convened Minutes of 2 meetings atich'd*
Appendix I Communication and Education (a) Community at large	• . Media interviews have been on-going (inc. DFO/CBC) • Development of Poster was discussed, simple message like that of "flowers" on the Atlantic Coastal Plains group • Brochure needed and deferred to new Communications Sub-Group, Museum could help with layout pictures etc. • Talk given to the South Shore Naturalist group by J. Gilhen based on 10-most basic questions discussed as possible core or template usable by others.	• CBC "In nature" and ATV's Breakfast TV • Hard copy of outline of presentation provided to RT for use as template/ consideration by Communications Subc. • April "Environment Week" issue of Lighthouse Publ (Bridgewater). & Liverpool Advance suggested by Jill Comolli. • DesBrisay Museum display area.	See Minutes for details • Need to increase visibility in the community and for a Sub group member linked with the community. Products should be developed/ tailored for the people of the Petite. "Entry points" well in advance of activities (i.e. - fish appearing at the Wildlife Park) if Communications is to capitalize on the event. • Communications plan to be developed with or without funding. For '04; need community stewardship' project for submission to the HSP. • Merit in Highway 103 road sign indicating the Petite being "home to the Atlantic Whitefish". ***(Action - Mike Fax will bring to the Town for consideration).*** • NSPI-HSP community education and outreach on Tusket to summarize the information collected to date for pamphlet/poster for distribution to community. Objective is to inform public about Atlantic whitefish with focus on the threats (habitat quality, exotic species etc.) to successful reintroduction to the Tusket watershed. Expected outcomes include –1) increased public awareness of the species and ways to facilitate recovery and

RECOVERY OBJECTIVES	ACTION PLANS (from April 11 '02)	ACTION PLANS (Nov 29 '02)	Update on ACTION PLANS (Apr. 10/03)
			survival-a decrease in potentially harmful activities (i.e., illegal introductions of exotics) & 2) increased public/landowner participation in species identification/reporting that will enhance the monitoring program and increase awareness of the importance of endangered species protection and conservation .
(b) Schools	• Suggested that we develop an education package that could be used for various venues (cubs, Kiwanis, etc.) Something that can be tailored to the individual group • A pilot package is being developed in NB by the province and EC on Species at Risk – Main package, but tailored towards specific areas and different age levels (i.e., one each for iBoF salmon, plover, etc.) • ***(Action: Mark Elderkin to pass product ideas to Communications Sub group.)***	• Communications Subcommittee to plan thrust and possible framework at first meeting in Jan '03. • Marilyn Webster in Dept of Education is possible contact. • "Fish Friends" as a model if there were surplus fish to place in schools? • Endangered spp. Pavilion at the Shubie Wildlife Park – live product recommended.	• See # 3 in minutes • Schools - there is a real need - the museum is finishing up a teachers kit which will be distributed to schools in the south shore - see communication notes. • Planning continues with idea that teacher kits would also need to be available.
(c) Networking with interest groups	• Recommended that if NS does a reprint of their species fact sheets that AW should be a priority. Update of info. Would be advantageous. ***(Action: Jason LeBlanc*** • ***NSP has $500 HSP funding for educational purposes*** in relation to whitefish. This could possibly be used for printing of Posters/information sheets; TREPA could also contribute (?) • For the COSEWIC visit – Rod to provide new BIO open house poster for viewing and Province's fact sheets for handouts ***(Action: Lynn Cullen to send the fact sheets to John Gilhen and Bev Davison. Rod Bradford to provide a copy of the poster.)*** • Discussion also on Wildlife Festival with NS Wildlife and EC as potential showcase to 10,000 people & "Fishermen and Scientist" group.	• NSDAF inviting input for revised poster by early January e.g., "live" color image ***(Action all: ideas to Jason LeBlanc)***. • Deployment still uncertain. • Completed, - positive feedback on the stream side display. • Opportunity forgone, Sept '02 in Cole Harbour. Requires purchase of table attendance of 10K+? Sherman Boates to be contacted for future event. • NS Summary Fishery Regulations to include write-up and color image.	• Completed - input received from only one team member. • Remained the same as last year. • Public outreach questionnaire (Appendix I)

Atlantic Whitefish Recovery Team Meeting
September 24, 2003

RE: Inland Fisheries Habitat Stewardship Project
Affect of smallmouth bass on Atlantic whitefish

The Inland Fisheries Division of the NS Dept. of Agriculture and Fisheries received up to $32 K to assess the potential affect smallmouth bass may have on Atlantic whitefish present in the Petite Riviere watershed. The project has two major components: (1) stewardship initiatives and (2) biological assessment. A project co-ordinator has been hired (Heidi Bishop) to lead both aspects of the project.

STEWARDSHIP INITIATIVES

Bluenose Atlantic Action Project (Mahone Bay – contact Brooke Cook)

1. Develop and distribute a brochure on illegal introductions with special notation re: smallmouth bass in the Petite Riviere watershed.
2. Project initiatives and summary documents on BACAP website
3. BACAP newsletter – special issue for this project
4. Distribution material at HSP conference on NB

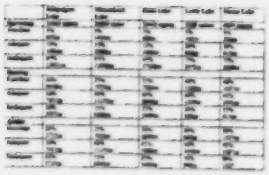
Bluenose Bassmasters (Bridgewater – contact Mark Wagg)

1. Linkages with BASS- Bassmasters publication (600,000 circulation) would like to run several short items on this project.
2. Potential for major item in Bass Times (60,000 circulation)
3. Interest expressed from Ontario Ministry of Natural Resources re: bass-whitefish interactions (Opeongo Lake, Algonquin Park has both bass and whitefish as well as several lake in Nova Scotia including Millet, Mink, Parr and others)

FIELD COMPONENT

- Habitat survey complete on all nine lakes that contain smallmouth bass in the watershed (see partial table on reverse)
- No evidence of nesting in Hebb, Millipsigate or Minamkeak
- Several bass observed in Minamkeak
- 22.5 man hours of angling in Millipsigate (0 bass, 1 large male speckled trout)
- Moose Lake 90% of spawning activity takes place in approximately 10 of linear shoreline
- Stomach analysis of bass from Hebb, Millipsigate and Minamkeak will take place if samples can be captured.
- Bass in at least Andrew and Lewie will be tagged to assess migration.
- Assistance provided to DFO for fall trap net survey

Report will be made available for spring AWCRT meeting.



DRAFT

REGULATORY IMPACT ANALYSIS STATEMENT

(This statement is not part of the Regulations)

Description

The *Fishery (General) Regulations* apply in the provinces of Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland, British Columbia and in the Yukon and Northwest Territories and prohibit the release of live fish into any fish habitat or the transfer of any live fish to any fish rearing facility. These regulations are designed to conserve and protect fish populations by ensuring that releases or transfers of live fish are in keeping with proper fisheries management and control objectives, to protect fish from diseases, disease agents and from adverse genetic affects.

Since the inception of these regulations in 1994, there has not been a single conviction, according to the Departmental Violation System, for the illegal release of live fish into fish habitat. This is the case despite widespread illegal releases of often non-indigenous fish species.

The spread on non-indigenous fish species in Nova Scotia is well documented. In 1945, smallmouth bass, non-indigenous to Nova Scotia, were present in only 2 sites in the province. The number of sites in which smallmouth bass were confirmed had increased to 105 by 1995. In 2002, eight years after introduction of the regulations aimed at curbing this type of activity, the number of sites in the province where the presence of smallmouth bass was confirmed, increased to 173. It is projected that by 2005 smallmouth bass will be in 210 sites in Nova Scotia. In 1945, chain pickerel, another non-indigenous species, were present in only 3 sites in Nova Scotia. The number of sites in which chain pickerel were confirmed had increased to 48 by 1995. In 2000, the number of sites in the province where the presence of chain pickerel was confirmed, increased to 74, and it is projected that by 2005 chain pickerel will be in 100 sites in Nova Scotia.

The situation in New Brunswick, although not as precisely documented, is equally as alarming. Muskellunge, a highly predatory species, are not native to New Brunswick waters but are believed to have escaped into the headwaters of the Saint John River system (the largest of the province's rivers) from a lake in Quebec where they were illegally released. Muskellunge have migrated downstream past three major hydro dams and are now found throughout the watershed as far south as the Nashwaak River near Fredericton. There are also unconfirmed reports that walleye have been illegally released into the Saint John

River system. In 2001 attempts were made by the province of New Brunswick to eradicate chain pickerel that were discovered in a lake tributary to the Miramichi River; a world class salmon river.

Sportfishing groups and biologists in these provinces consider that the current spread of non-indigenous species will impact the abundance of native fish species and other aquatic species including amphibians.

Chain pickerel and smallmouth bass are now established in the habitat of the "endangered" inner Bay of Fundy salmon. In 2001 the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed Inner Bay of Fundy salmon as an endangered species. Freshwater habitats for inner Bay of Fundy salmon include parts of both Nova Scotia and New Brunswick. Illegally introduced chain pickerel and smallmouth bass now co-habit waters with "endangered" Atlantic whitefish. In 1984, Atlantic whitefish were declared endangered by COSEWIC and this species is believed to exist in only one remaining watershed in the world; the Petite Rivière in Nova Scotia. While it is too early to determine if the presence of non-indigenous fish in the habitats of these two endangered species will prevent recovery, it can be presumed that their presence will be a compounding factor.

It is clear that the existing regulations are not achieving their intended objectives and need to be strengthened. Although the regulations prevent the release of live fish into fish habitat without a licence, enforcement is difficult. Illegal releases are clandestine in nature and unless the activity is observed, or someone comes forward and is willing to testify, (which has not been the case to date) it is virtually impossible to lay charges. Effectiveness of regulations would be greatly enhanced by creating a general prohibition on the transport alive or possession alive of fish.

The challenge, however, is not to impact legitimate practices. For example shellfish (clams, mussels, oysters, lobsters, crabs) intended for human consumption are most often transported and possessed in a live state until cooked. Fish purchased from pet stores destined for in-house aquariums with no chance of escape to the wild, generally speaking, pose little threat to fish resources or their habitats. Fishing tournaments licensed or sanctioned by the provinces, where the target species are caught and held in live wells but later returned to the same waters from which they were taken, do not pose significant risks.

However, anyone in possession of live chain pickerel poses a very real and serious threat. The chance of apprehending an individual under these circumstances is greater than observing the person carry out an actual release that only takes seconds.

The situation in the Maritime Provinces is serious. The extent of the problem is well documented, there are implications for two endangered species and there have been extensive consultations and a call from endangered species Recovery Teams, other stakeholders and the provinces for DFO to act. This proposal, therefore, is to amend the *Maritime Provinces Fishery Regulations* to prohibit the live transport or possession alive of fish without a licence, subject to the following exceptions.

The prohibition would not apply to

- fish obtained for stocking, artificial breeding or scientific purposes under written permission from the Minister issued pursuant to section 4 of the *Fisheries Act*;
- an activity where the release or transfer of fish is being carried out under a valid licence issued pursuant to section 56 of the *Fishery (General) Regulations*;
- the use of live fish of certain species possessed or used for bait in boundary waters between New Brunswick and Maine as authorized under subsection 19(2) of the *Maritime Provinces Fishery Regulations*;
- the following minnow species: dace, chub, shiners, fallfish, killifish, sticklebacks and mummichogs;
- fish purchased at pet stores and transported directly to residences or businesses for use in private aquariums;
- shellfish being relocated under a shellfish replanting licence issued pursuant to section 29 of *Maritime Provinces Fishery Regulations*;
- shellfish intended for human consumption;
- marine finfish species being exported from the Maritime Provinces for human consumption;
- marine worms or American eels;
- fish caught in provincially sanctioned fishing tournaments or derbies where the fish are held alive for measuring and weighing and then released to the same waters in which they were caught.

Alternatives

The Province of Nova Scotia tried to introduce legislation to restrict the live transport of fish but was advised by their Department of Justice that this was a matter of federal jurisdiction.

Public education and awareness via the media and other avenues has been used extensively in the Maritimes to address this problem, with limited success. Angling summaries produced by each Maritime Province and issued annually with their angling licences contain warnings and advisories about the negative consequences of illegal releases of fish.

A reward system that would pay ($500) for information leading to the conviction of individuals illegally releasing fish was tried by DFO but no useful information was obtained. More recently, at least one non-government organization attempted to establish a reward program but was not successful in obtaining private funding.

Programs such as public education, awareness and financial rewards would be complementary in nature and not considered an alternative to regulations. Clearly, the matter of releasing fish in to fish habitat is considered serious enough to warrant legislation as already demonstrated by the existence of sections 55 and 56 of the *Fishery (General) Regulations*. It is the failure of these regulations, in their present form, to adequately address clandestine releases that make it necessary to adopt new and more easily enforced regulations.

Benefits and costs

There will be no costs to stakeholders or taxpayers as a result of implementation of these regulations. Only those individuals carrying out an already illegal activity will be impacted by these amendments.

Persons who can demonstrate legitimate reasons to transport alive or posses alive the species covered by these amendments may apply to Fisheries and Oceans for a licence. There is no fee for such a licence.

Implementation of these regulations is expected to improve efficiency in enforcement and benefit native fish species in the Maritime Provinces.

Reductions in the illegal release of fish will benefit native species and is essential in maintaining the natural ecosystems that have evolved since the last glacier retreat. Economically, it costs less to restore, enhance and recover indigenous fish populations and ecosystems in the absence of competition from non-indigenous species.

Costs to DFO and the provinces will be limited to the production of materials to publicize the amendments. Enforcement costs will not change as a result of these amendments although some redistribution of effort may take place.

Consultations

Consultations on the need to address illegal fish releases have been ongoing and varied. All three Maritime Provinces have been consulted and

support strengthening of federal regulations to address the problem. In addition, the following stakeholder groups and organizations have been consulted and support new regulatory initiatives.

Atlantic Whitefish Recovery Team
Inner Bay of Fundy Atlantic Salmon Recovery Team
The Province of Nova Scotia's Recreational Fisheries Advisory Councils
The Province of Nova Scotia's Inland Fisheries Advisory Committee
The Nova Scotia Salmon Association
The Canadian Association of Smallmouth Anglers
Trout Nova Scotia
The Fisheries Institute of Nova Scotia
The Nova Scotia Federation of Anglers and Hunters
Fisheries and Oceans Salmon Zone Management Advisory Committees
Saint John River Management Advisory Committee
Saint John River Basin Board
Atlantic Salmon Federation

(Need help here with other groups in NB and PEI. We are also weak on consultations with Aboriginal groups)

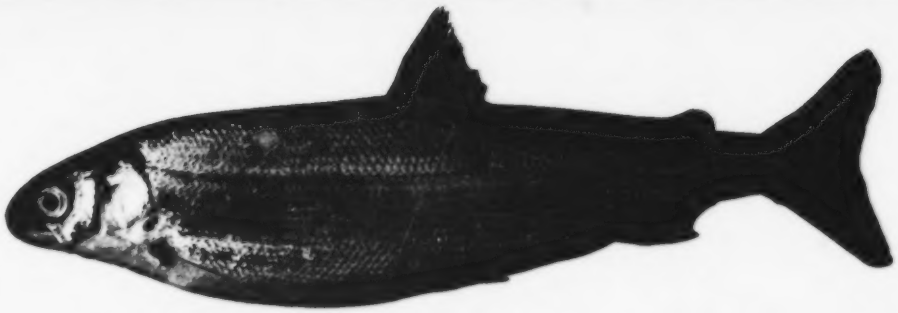
Compliance and Enforcement

Once the amendments are approved, the public, sportfishing groups, other stakeholders and tourists will be informed of the regulatory changes by press releases. In addition, the provinces will communicate the changes in their annual angling summaries that accompany each sale of a recreational licence. Information about the amended regulations will also be available on federal and provincial web sites.

Fishery officers and provincial conservation officers will enforce these regulations during the course of their routine patrols in the same way that existing provisions of the *Fishery (General) Regulations* are enforced. Enforcement actions include issuing warnings, laying charges for violations and seizure of any equipment used in the commission of an offence. The *Fisheries Act* prescribes penalties, upon conviction, for contravention of the regulations which include jail terms up to 24 months and/or fines up to $500,000. In addition, the courts may order the forfeiture of vehicles or other equipment used in the commission of an offence.

Draft 3
September 17, 2003
GJS

Attention



The Endangered Atlantic Whitefish

Atlantic whitefish are generally eight to 15 inches (20 to 25 centimetres) in length, with an elongated body and deeply forked tail. They are dark blue to dark green on the back, silvery on the sides and silvery to white on the belly. The back dorsal fin and tail fin are dusky colored. It has a small, fleshy fin on the back, (adipose fin) between the dorsal and tail fin. The three lower fins are light in colour.

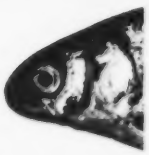
The endangered Atlantic whitefish is known to occur in only one water system in the world, the Petite Rivière watershed area in Lunenburg County. Landlocked Atlantic whitefish have been reported from Millipsigate, Minamkeak and Hebb Lakes. There are also occasional reports of the fish in the Petite Rivière and the LaHave River estuaries.

The species, which may be known to some as Acadian whitefish once resided in the Tusket River watershed. They have not been seen there for several years.

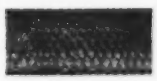
Acid water conditions, poor land practices that impact habitat, barriers to fish passage, overfishing, and competition with other fish species are believed to be causes of its decline. Little is known about its diet, growth, habitat requirements or former distribution. However, scientists are conducting research on the species to fill knowledge gaps and assist in recovery efforts.

Listed as endangered, Atlantic whitefish is a protected species, therefore, it is illegal to fish for, or retain, Atlantic whitefish. If you see or accidentally catch what you believe may be Atlantic whitefish, handle the fish gently and return it to the water. Take note of the date, exact location, size and appearance of the fish and notify the Department of Fisheries and Oceans or the Nova Scotia Department of Agriculture and Fisheries.

Features



Upper and lower jaws are approximetely equal in length



Larger scales than Atlantic salmon or brook trout

Adipose fin

Forked tail

Fisheries and Oceans Canada
Pêches et Océans Canada

Canada

Recovery actions/ projects couched in terms of "Essential" for (E), "May provide" (M) and "Desirable" for (D) Recovery. [Sept 25, exercise ranked actions as being High (H), Medium (M) and Low (L) priority, providing a slightly different connotation relative to the intention of item 5 (#2) of draft Agenda]

RECOVERY OBJECTIVES Recovery actions	**Project(s)**	**Priority H, M, L (E, M, D)**	**Source $**	**Champion**
A. Conservation and Restoration of Atlantic Whitefish Populations *				
1. Planning for in-situ (on site) conservation and recovery	Ongoing - New tanks are required.	**H/ *E***	SARCEP	DFO
2. Planning for ex-situ (off site) conservation fish culture	Nothing at this time	**/ *D***		
3 Planning for stock restorations (using fish produced conservation fish culture) (a) public consultations		**H/ *E***		
(b) experimental	Laboratory physiological challenges	**H/ *E***	SARCEP	DFO
(c) operational [contingent on (a& b)]				
4. Contingency planning				
B. Species and Habitat Conservation, Protection and Management				
1. Species Conservation, Protection and Management (a) regulatory protection of whitefish & management of associated fisheries	No new projects identified but needs to be an ongoing priority	**H/ *E***	None identified	None identified
(b) predator-prey management	Continuation of existing work on bass - contingent on identifying the relevance to recovery	**H3/ *E***	HSP/ possibly research based	NSDAF/ DFO

RECOVERY OBJECTIVES Recovery actions	**Project(s)**
2. Habitat Conservation, Protection and Management (a) watershed and site specific habitat quality management	
(b) important habitat protection and management	
(c) habitat restoration (e.g. fishways)	Real time or expt'l, design work e Crousetown
(d) critical habitat	Seasonal habitat characterisation f life stages (knowledge gap)
3. Stewardship ***Petite*** (a) Aboriginal people (b) Private sector, including industry (c) Non governmental organisations (d) Commercial and recreational fishers (e) Shoreland Owners	 Completed Completed Completed

	Priority H, M, L (E, M, D)	Source $	Champion
	/ ***D***		
	/ ***D***		
ork e.g.,	M2/ ***M***	Habitat Conservation Fund (DFO)	DFO - Querbach
tion for all	H1/ ***E***	DFO research based - may eventually lead to HSP - & possibly HSP as it involves CH	DFO - Querbach
	H2/ ***E***		RT CPAS (Communication Committee)
	H2/ ***E***		RT CPAS (Communication Committee)

RECOVERY OBJECTIVES Recovery actions	**Project(s)**	**Priority** **H, M, L** **(E, M, D)**	**Source $**	**Champion**
Stewardship ***Tusket*** (a) Aboriginal people (b) Private sector, including industry (c) Non governmental organizations (d) Commercial and recreational fishers (e) Shoreland Owners	Completed Public *Science Day* for private/ NGO orgs highlighting only whitefish Completed	**H/ *E*** ***D***		DFO (Yarmouth)
4 Watershed Management - Shoreline and Waterway Conservation (a) Municipal Planning Units ***Tusket*** ***Petite***	Investigate bathymetry, temperature, water level draw downs (could be considered in terms of CH)	**H1/ *E***	HSP or Research project	Town Commission/ DFO
(b) Crown Lands (NSDNR) , Building and Development (NSDOE)		***/ D***		
(c) Federal & Provincial Parks, Park Reserves & Protected Areas ***Tusket*** ***Petite***		***/ D***		
(d) Private stakeholders ***Tusket*** ***Petite***		***/ D*** ***/ D***		

RECOVERY OBJECTIVES Recovery actions	**Project(s)**	**Priority** **H, M, L** **(E, M, D)**	**Source $**	**Champion**
C. Monitoring and Research				
1. Population Monitoring (a) non-intensive population counts anadromous populations *Tusket*	N/A			
Petite	Identification of anadromy	/ ***M***	opportunistic	DFO research
land locked populations Tusket	N/A			
Petite	Primary focus	/ ***D***		
(b) intensive population counts *Petite*	Extend the coverage of sampling to all three lakes, assess ability to estimate abundance, resolve genetic structure & determine minimum viable pop'n size	H/ ***E***	SARCEP	DFO/DAL
(c) radio-telemetry	See 2b below			
2. Research (a) Historical distribution	Opportunistic	**L/ *D***		RT/ DFO
(b) Habitat quality and quantity (CH)	Extension of pH & salinity challenges [ecophysiology] with possible genetic component as these factors may be section gradients, *telemetry* to track fish & identify physical/ chemical habitat preferences	**H/ *E***	SARCEP Plus?	DFO (with logistical support ?)
(c) Genetics	See 2b above	/ ***M***		
(d) Health, inc. diseases & parasites	Ongoing	**L/ *D***	DFO A-base	DFO
(e) Nutrition	Review artificial diet requirements	**H/ *D***	DFO	DFO

RECOVERY OBJECTIVES Recovery actions	**Project(s)**	**Priority** **H, M, L** **(E, M, D)**	**Source $**	**Champion**
(f) Life cycle history, behaviour and physiology	Ongoing	**L/ *D***		DFO
(g) Identification of stocking sites	Ongoing	**/ *D***	SARCEP	DFO
(h) Invasive species	Ongoing/ Tusket/ Annis	**H/ *E***	DFO A-base	DFO
D. Communication and Education				
(a) Community-at-large	Linkages with Petite River Watershed Advisory Group in terms of stewardship messages & approaches for the public	**H/ *E***		RT CPAS (Communication Committee)
(b) Schools	Complex issue with requirement for long term strategy & planning; links to 2c.	**H/ *D***		RT CPAS
(c) Networking with interest groups	Linkage with 1a; Website to link with townsite (?) & schools Interaction with Bluenose ACAP	**H/ *D***	HSP?	RT CPAS
(d) Other actions:	Linked to 1abc Media exposure - needs to be strategic during certain times Development of *Information Kit* Development of visuals/ video footage Development of message e.g., preparation for spp. re-/ introductions	**H/ *D***		RT CPAS / DFO + other champions

Summary of DFO salmonid stocking activity in Petite Riviere (1976-1990). Lower lakes=below Hebbville Dam, Upper Lakes =above Hebbville Dam, River =Petitie Riviere below Hebbville Dam. Electronic files only.

Sum of Stocked (n)			Stage2			
Species2	Location	Year	age 0 plus	age one and older	smolts	Grand Total
Atlantic salmon	Lower Lakes	1986	1999			1999
		1987			5223	5223
		1991	6001			6001
		1993	4010			4010
		1997	7497			7497
		1998	3418			3418
	Lower Lakes Total				5223	28149
	River	1982			4487	4487
		1983			7811	7811
		1984	28746		8002	36748
		1985	30003		8499	38502
		1986	7997		15501	23497
		1987			14253	14253
		1988			8010	8010
		1989	11400	3001	16235	30636
		1990	21599		14509	36108
		1991	10010		15802	25812
		1992	14999		15219	30217
		1993	11031		12007	23038
		1994	15012		14998	30010
		1995	7250		13476	20726
		1996	12999		21440	34439
		1997	7497		9601	17097
		1998	6836		11216	18052
		1999	12936		10804	23740
		2000	14000		8085	22085
	River Total		212315	3001	229954	445269
	Upper Lakes	1984	10000			
	Upper Lakes Total		10000			
Atlantic salmon Total			245240	3001	235177	
Brook trout	Lower Lakes	1976		701		701
		1977		700		700
		1980	1080			1080
	Lower Lakes Total		1080	1401		2481
	River	1976		800		800
		1977		698		698
		1980	2160			2160
	River Total		2160	1498		3658
	Upper Lakes	1976		200		200
		1977		199		199
	Upper Lakes Total			399		399
Brook trout Total			3240	3298		
			248480	6299	235177	

Note: Andrew Lake was the only "Upper Lakes" stocked with brook trout

NOVA SCOTIA
Department of Agriculture & Fisheries
Inland Fisheries Division

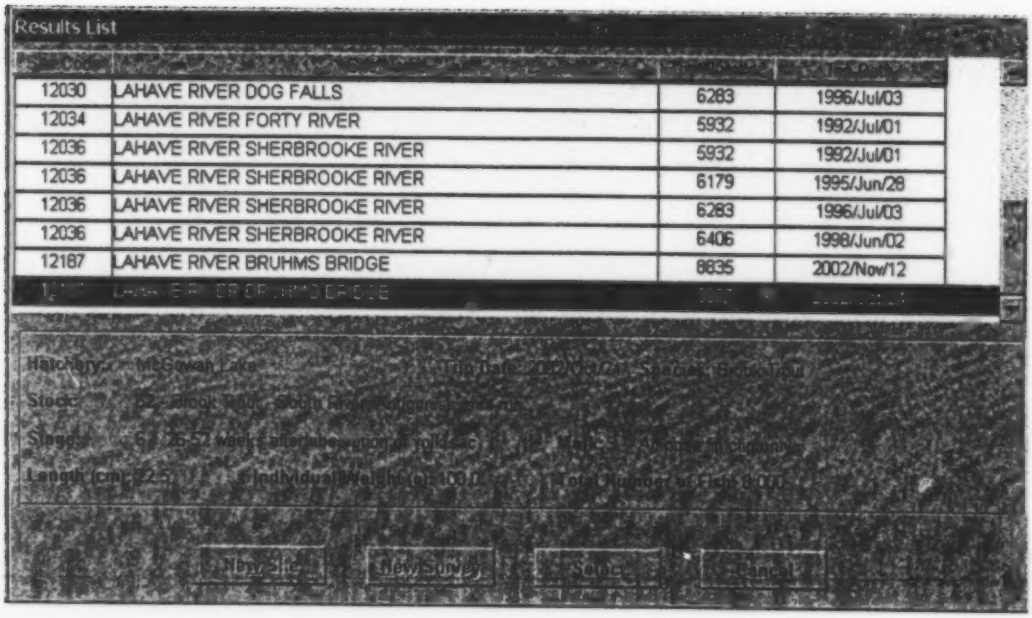
STOCKING RECORDS FOR Petite Riviere Watershed
1976 - 2002

Site Name	Lake/ Stream	Site Code	NS Mapbk	Date	Species	Fish Class	Fish
ANDREW	L	12074	15B3	1977/May/04	Brook Trout	Yearling	199
				1976/May/17	Brook Trout	Yearling	200
BRANCH	L	12087	15C4	1977/May/04	Brook Trout	Yearling	332
				1976/May/04	Brook Trout	Yearling	400
FANCY	L	12054	15C4	2000/Nov/10	Brook Trout	Fingerling	3000
				1999/Oct/08	Brook Trout	Fingerling	7500
				1998/Oct/15	Brook Trout	Fingerling	2800
				1997/Oct/09	Brook Trout	Fingerling	6480
				1995/Nov/10	Brook Trout	Fingerling	4000
				1994/Dec/06	Brook Trout	Fingerling	4480
				1993/Oct/22	Brook Trout	Fingerling	5984
				1992/Oct/02	Brook Trout	Fingerling	4500
				1991/Oct/30	Brook Trout	Fingerling	3300
				1990/Oct/25	Brook Trout	Fingerling	2000
				1989/Oct/18	Brook Trout	Fingerling	1500
				1980/Oct/06	Brook Trout	Fingerling	1080
				1977/May/04	Brook Trout	Yearling	700
				1976/May/11	Brook Trout	Yearling	701
HUEY	L	12186	15D5	2001/Jun/07	Brook Trout	Yearling	800
				2000/May/17	Brook Trout	Yearling	750
				1999/May/17	Brook Trout	Yearling	750
				1997/Apr/22	Brook Trout	Yearling	1000
				1996/May/27	Brook Trout	Yearling	630
				1996/May/07	Brook Trout	Yearling	490
				1995/Apr/21	Brook Trout	Yearling	500
				1993/May/21	Brook Trout	Yearling	500
				1992/Jun/10	Brook Trout	Yearling	500
				1991/Jun/05	Brook Trout	Yearling	500
				1991/Apr/30	Brook Trout	Fingerling	500
MATTHEW	L	12965	15B4	1995/Apr/21	Brook Trout	Yearling	500
				1988/Jun/01	Brook Trout	Yearling	250
				1988/Apr/27	Brook Trout	Yearling	250
MOOSE	L	12105	15C4	2002/Jun/20	Brook Trout	Yearling	800
				2001/Jun/07	Brook Trout	Yearling	800
				2000/May/17	Brook Trout	Yearling	750
				1999/May/17	Brook Trout	Yearling	750
				1997/Oct/09	Brook Trout	Fingerling	4320
				1997/Apr/22	Brook Trout	Yearling	1000
				1996/May/07	Brook Trout	Yearling	490
				1995/Apr/21	Brook Trout	Yearling	500
				1994/Oct/07	Brook Trout	Fingerling	2310
				1993/May/18	Brook Trout	Yearling	600
				1992/Jun/10	Brook Trout	Yearling	500
				1980/Oct/06	Brook Trout	Fingerling	1080

NOVA SCOTIA
Department of Agriculture & Fisheries
Inland Fisheries Division

STOCKING RECORDS FOR Petite Riviere Watershed
1976 - 2002

Site Name	Lake/ Stream	Site Code	NS Mapbk	Date	Species	Fish Class	Fish
MOOSE	L	12105	15C4	1977/May/04	Brook Trout	Yearling	299
				1976/May/12	Brook Trout	Yearling	400
WALLACE	L	12052	15C4	2002/May/31	Brook Trout	Yearling	1120
				2001/Jun/01	Brook Trout	Yearling	1200
				2000/Jun/02	Brook Trout	Yearling	1250
				1999/Jun/04	Brook Trout	Trophy	50
				1999/Jun/04	Brook Trout	Yearling	1500
				1998/Nov/10	Brook Trout	Fingerling	1680
				1998/Jun/05	Brook Trout	Trophy	60
				1998/Jun/05	Brook Trout	Yearling	1680
				1997/Jun/06	Brook Trout	Trophy	50
				1997/Jun/06	Brook Trout	Yearling	1500
				1997/Apr/22	Brook Trout	Yearling	1000
				1996/Jun/07	Brook Trout	Yearling	1260
				1996/May/27	Brook Trout	Yearling	840
				1995/Jun/22	Brook Trout	Egg/Fry	10000
				1995/Jun/09	Brook Trout	Trophy	30
				1995/Jun/09	Brook Trout	Yearling	1000
				1995/Apr/21	Brook Trout	Yearling	800
				1994/Jul/08	Brook Trout	Trophy	50
				1992/Jun/10	Brook Trout	Yearling	750
				1991/May/30	Brook Trout	Fingerling	500
				1990/Jun/20	Brook Trout	Yearling	800
				1990/May/03	Brook Trout	Yearling	750
				1990/Apr/03	Brook Trout	Fingerling	400
				1989/Oct/31	Brook Trout	Fingerling	1000
				1989/May/30	Brook Trout	Yearling	250
				1988/Jun/01	Brook Trout	Yearling	250
				1988/Apr/27	Brook Trout	Yearling	500
				1980/Oct/06	Brook Trout	Fingerling	1080
				1977/May/04	Brook Trout	Yearling	399
				1976/May/04	Brook Trout	Yearling	400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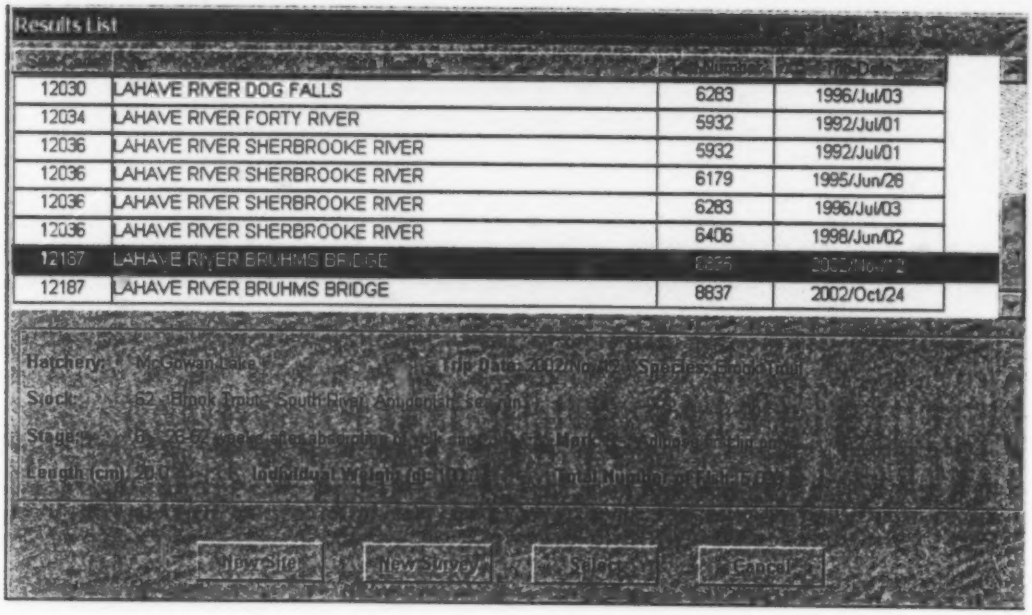
12030 LAHAVE RIVER DOG FALLS 6283 1996/Jul/03
12034 LAHAVE RIVER FORTY RIVER 5932 1992/Jul/01
12036 LAHAVE RIVER SHERBROOKE RIVER 5932 1992/Jul/01
12036 LAHAVE RIVER SHERBROOKE RIVER 6179 1995/Jun/28
12036 LAHAVE RIVER SHERBROOKE RIVER 6283 1996/Jul/03
12036 LAHAVE RIVER SHERBROOKE RIVER 6406 1998/Jun/02
12187 LAHAVE RIVER BRUHMS BRIDGE 8835 2002/Nov/12
Hatchery:
Stock:
Stage:
Length (cm):
New Site
New Survey
Select
Cancel


Results List
12030 LAHAVE RIVER DOG FALLS 6283 1996/Jul/03
12034 LAHAVE RIVER FORTY RIVER 5932 1992/Jul/01
12036 LAHAVE RIVER SHERBROOKE RIVER 5932 1992/Jul/01
12036 LAHAVE RIVER SHERBROOKE RIVER 6179 1995/Jun/28
12036 LAHAVE RIVER SHERBROOKE RIVER 6283 1996/Jul/03
12036 LAHAVE RIVER SHERBROOKE RIVER 6406 1998/Jun/02
12187 LAHAVE RIVER BRUHMS BRIDGE 8835
12187 LAHAVE RIVER BRUHMS BRIDGE 8837 2002/Oct/24
Hatchery:
Stock:
Stage:
Length (cm):
New Site
New Survey
Select
Cancel

Maritimes Region Recovery Strategy* Guidelines
Suggested Format and Required Content
Accordance of the Atlantic Whitefish Recovery Strategy

1. Status of species
   - COSEWIC designation - Yes
   - Reasons for designation - Yes
   - Historic/current distribution and abundance information – Yes; however, it was concluded that there is insufficient information.

2. Statement of recovery feasibility – Yes. It was the team's opinion.

3. Recovery objectives
   - Long-term objectives (population and distribution objectives that if met would be considered "recovery" by the team) – Not specifically (i.e. no target number noted); however, the main goal of the strategy is long-term.
   - Short-term objectives (5 year target) – There are timelines for the objectives (more specifically, the actions under each objective); however, there are no anticipated completion dates. This may be due to the fact that some components will be ongoing even after recovery (e.g. monitoring). Some may cease, however, and perhaps this should be indicated?

4. Species description that is consistent with COSEWIC report that includes species:
   - Ecology - Yes (in Appendix)
   - Biology - Yes (in Appendix)
   - Needs - Yes (in Appendix)
   - Identification of knowledge gaps – Not explicitly

5. Habitat Requirements
   - Identification of critical habitat to the extent possible based on the information available – No. There is some indication that habitat requirements are not known. Perhaps this should be addressed through expert opinions?
   - Examples of activities likely to lead to habitat destruction – Yes, embedded under the section dealing with threats.
   - Schedule of habitat studies information is inadequate – Not explicitly, however, to some extent under Recovery Action C2. Also, studies to date and ongoing are outlined.

6. Assessment of threats and other barriers to recovery
   - Recommendations to mitigate these threats including measures already in place – Yes.
   - General description of the research and management activities needed to meet short and long term recovery objectives –Yes. Explicit to each threat mitigation suggestion.
   - Statement of allowable activities/level of permissible harm

7. Statement of when one or more action plans will be completed – No.

8. Appendices: References to pertinent studies – Appendices are very thorough. All of the biology is in the Appendices. Perhaps the biology should be shorted and put within the document?

*This list refers to only the Recovery Strategy and does not include required elements of an Action Plan.

ESTABLISHING EFFECTIVE STEWARDSHIP PRACTICES FOR THE ATLANTIC WHITEFISH IN THE PETITE RIVIERE WATERSHED, NOVA SCOTIA
HSP Pre-Proposal
November 2003

RATIONALE

The Atlantic Whitefish ***Coregonus huntsmani*** is an endemic Canadian species found only in two watersheds in Southwestern Nova Scotia: the Petite Riviere system in Lunenburg County and the Tusket River system in Yarmouth County. It is not found anywhere else in the world. The species was the first fish species in Canada to be classified as "endangered" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1984. This status was confirmed by COSEWIC in 2000. It is also protected under Maritime Fishery Regulations, the federal Species at Risk Act, and the Nova Scotia Endangered Species Act. Both natural and human induced pressures and threats have contributed to the decline and continued low abundance of the species. These pressures and threats include: acidification of their aquatic habitat as a result of acid rain, poor landuse practices, barriers to fish passage, and the introduction of non-native or exotic species into the watershed. The Bluenose Coastal Action Foundation (BCAF) is proposing to establish a watershed advisory board to address and implement effective habitat stewardship measures within the Petite Riviere system to ensure protection of critical habitat for the last remaining population of Atlantic Whitefish in the world. This project essentially addresses three of the four broad objectives outlined in the National Recovery Strategy for the Atlantic Whitefish.

BACKGROUND

The Petite Riviere watershed is a unique situation, in that the upper part of the watershed has been provincially designated as a Protected Watershed Area due to its importance as a water supply for the Town of Bridgewater. This designation implies that both water quality and quantity are above average and that the watershed is recognized as being significant at a local level. Also, the value assigned to this system by the Town may well have resulted in saving the last remaining population of Atlantic Whitefish. Although a portion of the watershed has some degree of environmental protection; there are other sections of the system that are facing development pressures, obstacles to fish passage, possible competition with foreign species, and water quality issues.

Both freshwater (landlocked) and anadromous populations of Atlantic Whitefish have been reported in the Petite system. Recent fieldwork has confirmed the existence of the freshwater population. However, the anadromous population is suspect based on Fisheries & Oceans Canada (DFO) trap net and survey data conducted at the mouth of the river in 1999 and 2000 (R. Bradford-DFO, 2001). Although it is important to note that the area where individuals are still found in significant numbers is that which receives the greater environmental protection (i.e., the Town of Bridgewater's water supply). Therefore, it could be said that Milipsigate, Minamkeak, and Hebb Lakes act as habitat that is essential for the Atlantic Whitefish populations within the Petite Riviere system.

The Petite Riviere Watershed Advisory Group, an established local volunteer-based organization, has compiled and disseminated a tremendous amount of information about the watershed over the years (e.g., fisheries and habitat information, water quality data, etc.). However, this group has since ceased operation, leaving a large gap in the Petite Riviere stewardship community. Although there are other small conservation/watershed groups in the area who act as local stewards, there is not a lot of information sharing between them. A formal platform is required to bring these groups together in an effort to establish a cohesive network for effective stewardship within the Petite system.

In summary, the Atlantic Whitefish is endangered on a global scale – if no or insufficient action is taken, the probability that the species will become extinct is very high. However, the Atlantic Whitefish Conservation and Recovery Team believes that, with proper actions, the species can very likely be adequately conserved, protected, and restored. The Petite Riviere system contains habitat that is believed to be essential for the Atlantic Whitefish, has some level of environmental protection in place, and has an established network of potential stewards ready to take positive action.

OBJECTIVES

The National Recovery Strategy for the Atlantic Whitefish outlines four broad objectives: (1) to conserve and restore Atlantic whitefish populations; (2) to conserve, protect, and manage the species and its habitats; (3) to monitor and conduct research on existing populations; and (4) to foster communication with and education of the public with respect to this species, especially in areas where it is known to occur. This project specifically addresses two of the four objectives listed above: (2) to conserve, protect, and manage the species and its habitat and (4) to foster communication with and education of the public with respect to this species, especially in areas where it is known to occur. The project also touches on a third objective, (3) to monitor and conduct research on existing populations.

The National Recovery Strategy for the Atlantic Whitefish also lists a number of priority Recovery Actions. The following priority recovery actions will be addressed in this project.

- Stewardship involving the following groups: Aboriginal peoples, private sector including industry, NGO's, commercial and recreational fishers, and shoreline owners.
- Non-intensive population monitoring
- Communication and Education within the community at large, schools, and networking with interest groups.

Year 1 (April 2004 – March 2005)

The first year of the project will be a planning and building phase. This will include the gathering and compiling of information, sharing of ideas and resources, identification of stakeholders, partnership building, development of a stewardship plan and effective stewardship tools, conducting habitat suitability surveys, and building relevant communications products to increase the awareness of the Atlantic whitefish and the Petite Riviere system.

Year 2 (April 2005 – March 2006)

The second year will be the actual implementation and delivery phase of the project. This will include the development of the Petite Riviere Watershed Advisory Board along with the delivery of an education program and communications products. This group would be made up of individuals representing stakeholder groups within the watershed (e.g., industry, cottage owners, recreational users, NGOs, etc.). The Advisory Board will be responsible for disseminating information, understanding and explaining political decisions, sharing and exchanging of information and resources, and the maintenance of watershed values and integrity.

PROPOSED METHODOLOGY

We are proposing to establish an advisory board for the Petite Riviere watershed for the purposes of developing and implementing effective habitat stewardship and protection practices for the Atlantic whitefish. The plan is to accomplish this goal in two phases: the first phase being planning and building, the second being implementation and delivery. In the first year of the project, we plan to host two workshops complete with minutes and summary reports. The first workshop will be intended as a sharing of information and perspectives between stakeholders with regards to the watershed. Topics of discussion at this meeting may include: an overview of the watershed and a broader appreciation for the system, water quality and quantity, industry and development, endangered and wild species present within the system, as well as recreation and cottage users. The second will be more of a visionary workshop with the end goal of developing a stewardship plan for the watershed. Outcomes of this session may include the development of tools for effecting better stewardship practices within the watershed and building of relevant communications products that raise the awareness of the value of the Atlantic whitefish and the Petite Riviere watershed as potential critical habitat. Throughout the first year of the project, BCAF intends to work on developing strong partnerships with other interest groups within the watershed to gather and compile all information pertaining to the Petite system. Special attention will be placed on Aboriginal relationships, as it is believed that they hold important historical information about the

Atlantic whitefish and the watershed. BCAF staff will also be conducting habitat suitability surveys within the watershed, specifically in the lower reaches, where less work has been done and less is known about this area. The purpose of these surveys will be to collect information but also to prepare for future stewardship in this area once more is known about the anadromous aspects of the Atlantic whitefish. The activities outlined in this proposal will be accomplished through a collaborative effort with the Atlantic Whitefish Recovery Team.

LONG TERM MANAGEMENT

BCAF is a non-profit charitable community-based organization that addresses the environmental concerns within a Lunenburg County watershed. Our goal is to promote the restoration, enhancement, and conservation of our ecosystem through research, education, and action. The organization receives direction from a volunteer Board of Directors and is supported by a full time Executive Director. BCAF has been an established member of the Lunenburg County community since its inception in the 1993-94 fiscal year. Over the past ten years, BCAF has successfully completed a number of projects in the Towns of Mahone Bay, Lunenburg, Chester, and Bridgewater. This project will be the second year in which BCAF has worked on an Atlantic whitefish project.

BCAF realizes the time and effort commitments associated with this proposed stewardship initiative. It is with great enthusiasm and dedication that BCAF accepts the challenge involved in undertaking this project and would like to stress our commitment to see it through to the end. The organization's proven project track record speaks for itself. Also, the establishment of a separate Advisory Board for the Petite Riviere watershed will hopefully ensure the long term success of this project.

BUDGET

Item	Total projected budget	Request from HSP	Partner contributions	
			$	In-kind
Salaries and benefits[1]	$38.6K	$12.0K	$26.6K	
Volunteer labour[2]	$15.0K			$15.0K
Materials[3]	$11.0K	$2.5K	$2.5K	$6.0K
Transportation[4]	$13.0K	$4.0K	$4.0K	$5.0K
Health and safety training[5]	$2.0K		$2.0K	
Workshops[6]	$20.0K	$11.5	$3.5K	$5.0K
Total	$99.6K	$30.0K	$38.6K	$31.0K

[1] One full-time project coordinator, one part-time project manager, and one full-time (4 month) field technician. Including associated MERC costs.

[2] Volunteer labour includes electrofishing (NS DAF and possibly NSSA), other interest groups within the watershed (e.g., sharing of resources and knowledge, watershed tours, etc.).

[3] Materials include both office supplies and equipment, as well as field supplies and equipment.

[4] Transportation – includes on the water transport as well as land travel for the project.

[5] H&S training for both field technicians, including: small boat operators course, first aid, CPR

[6] This would include costs of putting on a workshop, development of post workshop materials and reports, design and printing of communications products, etc.

* BCAF expects to enlist other funding partners, but at the present time they are unknown.

Potential Threat	*Assessment*	*Affect*	*Mitigation*	*Information or Action Required*
Water Quality				
Hatchery Effluent	H Proximity to spawning stream	Trophic structure change	Improved treatment/ plans for hatchery expansion	Heritage is addressing effluent quality but it is currently greater than the allowable rate. **More information is required here on the Lake Utopia water environment.**
Residential Effluent (cottages, homes)	H Shoreline development	Lake eutrophication through cumulative effects	New buildings will require adequate septic systems. Information and education programs for stakeholders are required.	Identify the camps on the beach and on the point in order to identify them and assess their potential impact. Assess the volume of input into the lake. Check the Fox report from DoEnv.
Recreational Impacts (boats, beach, swimming)	L Excrement from swimmings	Eutrophication	None needed	Track the number of tournaments/boat use to monitor in time.
Industrial draw-off from the DAM	M Due to dam	Access to spawning sites is more difficult; however, this is probably fine for the smelt, as it has been occurring on the lake for many years. The potential for fluctuations has increased in the time.	Mill Operating regime mitigates	None
Industrial draw-off from the MILL	L Due to the small volume of water drawn off by mill but more information may be required.	We think that there is little effect.	Water protocol in place	None
Commercial	L	Same as mill		
Residential	L	Same as mill		

Potential Threat	*Assessment*	*Affect*	*Mitigation*	*Information or Action Required*
Physical (Direct)				
Entrainment	L By mill, hatchery	Smelt get removed from the lake to a well through gravity (screens). - this to be clarified by the team	The hatchery and mill have been there for many years and standard operating procedures might be adequate.	Smelt are rarely seen in the well. However, we may need more information on this (e.g. distribution of smelt in the lake).
Dip Net (human)	H/L It is due to smelt removal; however, may be low at current levels. There is a potential threat if spawners are removed from the stream or fishing pressure increases.	Most of the fishery is for normal/giants but bait fishing uses dwarf forms; trampling of egg beds is rare.	Closing fishing in those streams (i.e. 3 identified) that have only dwarf smelt. There is no control over catch but it has had little effect with the same methods, numbers and places. Monitoring will be required.	Monitoring and/or enforcement issues? NB would have to monitor to ensure that this level of take would have no effect. We do not know the level in the past and we don't know what it will be in the future.
Predation (stocked fish)	L predators (eating smelt)	Salmon are released into the lake from the hatchery but smelt are not the exclusive diet of salmon.	Stocking at a low rate (lower than used elsewhere e.g. Maine).	Continue to monitor stocking and smelt levels.
Predator escapement	L salmon predators	Salmon escape from the hatchery vs from elsewhere.	They are being clipped to recognize and this is rare. No change of large release because they are inside the buildings in the tanks. It is very very unlikely at this point at heritage aquaculture or somewhere else. Apparently, hatchery fish are commonly caught. We require info from ASF.	Some mediation work has been done in Heritage aquaculture to remediate this threat.
Residential	L ATVs and foot traffic (could increase if traffic increases)	Crushing eggs etc	ATVS are prohibited but guidelines have been drafted to safely cross the stream	No further effort needed.

Potential Threat	*Assessment*	*Affect*	*Mitigation*	*Information or Action Required*
Physical (Indirect)				
Forestry	L Legislation is already in place. What will be the impact on water quality? The 30m rule should protect this stream.	Altering landscape that affects water quality.	Laws are in place that all forestry has to take place 30m from a stream. Special regulations in place that ensure other prohibitions on crown land. NB is empowered.	NB has purchased a tract of land in the vicinity of Lake Utopia; Crown and Connor's Land. The number of landowners is minimal. There are no real regulations for what activities can take place on private lands. **Action: Inform landowners that certain activities are not allowed.** Map out watercourses to make sure. There is concern of the landowner use of their property (e.g. improperly built road, ditch digging, skidder ruts). Anything that is done improperly may hamper the habitat. Monitoring will be required. Things can followed up on.
Forest Fires	L Habitat destruction/fire suppression			
Mount Pleasant Mine	L There was a high backflow in (tailings) one previous event following the breach of some other equipment.	Effluent-filled water was released into the lake.		
Blueberry fields – pollution	L but highly sprayed.	This pollution could interfere with the smelt life cycle.		
Wharfs and boat ramps	L May not be important due to season of concern.			

*H = High
M = Medium
L = Low

Attachment 29

Action Items from March 2004 Leatherback Turtle Recovery Team Meeting

Item	Individual
• Send an email to those members who have had limited participation and ask if they would like their name removed from the list.	K. Querbach
• Send all editorial comments on the March 2004 draft to Kirsten Querbach by April 2nd, 2004.	All
• Double check on discrepancy between the COSEWIC reasons for designation in the Pacific strategy versus the Atlantic strategy.	R. Jones
• Add the reasons for designation under the ESA into section entitled 'Global Status'.	C. Ryder
• Add better language regarding the IAC and the Bellagio Agreement.	C. Ryder
• Send reference on turtle anatomy in order to wordsmith appearance.	D. McAlpine
• Provide better images for strategy and confirm permission issues.	K. Martin
• Add updated information to the noise section regarding issues other than oil and gas.	P. Doherty and D. Fenton
• Updates on colonies and populations in Caribbean waters – to be added at consultation phase*	C. Ryder and M. James
• Add paragraph around Don McAlpine's map using text from published material.	D. McAlpine
• Follow up an anecdotal information regarding data from fixed gear interaction.	M. James
• Reword paragraph 2 on page 19 with respect to observer coverage vs unpublished information over past 15 years (i.e. Campana Pers. Comm).	O. Murphy and T. Atkinson
• Reword the first two paragraphs on page 20 of March draft –summary of report by James and Martin.	M. James

• Separate out two distinct thoughts currently under 'Poaching' section for better flow.	C. Ryder
• Add paragraph around SARA components of Critical Habitat to this section.	R. Jones and K. Querbach
• Add introductory and concluding paragraphs in CH section explaining why the team is not identifying it in the Strategy.	J. McMillan
• Add paragraph around map in CH section.	M. James
• Add schedule of studies in CH section by starting with the gaps under 'habitat' in the knowledge gaps section.	C. Merriman to initiate with comment by all members.
• Rework paragraph 4 on page 33.	O. Murphy and T. Atkinson
• Edit paragraph below the COSEWIC box to reflect discussion and feeling of the team.	R. Jones
• Email suggested names for peer review to Robert Jones.	All

*To be completed under a different timeline than April 5th, 2004.